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BRUCELLOSIS SPONDYLITIS

TREATMENT BY PHYSICALLY INDUCED HYPERPYREXIA

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Spondylitis is probably the most common complicating disorder of the bones and joints referable to undulant fever. The first proved instance of an actual suppurative lesion in the spinal column from which brucella organisms were cultured was reported in 1932 by Kulowski and Vinke.[1] Six more cases of brucellosis spondylitis have been reported in the English literature.[2] In the foreign literature, however, there are numerous reports of brucellosis infections of the spinal column. Piero Palagi[3] in 1934 gathered 29 cases of brucellosis spondylitis from the literature and added 17 cases of his own.

Most authors agree that spondylitis as a complication of undulant fever is most likely to occur several months after the onset of the febrile state; but cases of brucellosis have been reported in which localization in the spinal column developed as early as three weeks and as late as one year after the original infection. The patient may even appear to have recovered from the systemic disease only to become affected by the spinal complication of it at some later date. It has been suggested by Bishop[2] that spondylitis in such cases is a local recurrence of brucellosis probably caused by failure of the systemic forces to achieve immunization to the organism. Patients who are farmers, veterinarians, dairymen, butchers, packing house employees and also those who give a history of ingestion of raw milk and present the chief complaint of backache should be suspected of having brucellosis spondylitis if other clinical factors supporting such a suspicion are also present.

The treatment of brucellosis spondylitis resolves itself, of course, chiefly into measures directed against the systemic infection. To this end numerous procedures have been employed, including the intravenous injection of mercurochrome,[4] acriflavine hydrochloride[5] or metaphen,[6] administration of azosulfamide,[7] injection of typhoid vaccine and other fever producing foreign proteins,[8] specific brucellosis vaccine or immune serum, administration of generalized diathermy, ultraviolet or infra-red radiation,[9] generalized roentgen therapy and physically induced hyperpyrexia. The local treatment of brucellosis spondylitis may be surgical; that is, incision and drainage of an abscess may be necessary, or spinal fusion may be performed, as was done in 2 cases reported by Kulowski. But in the majority of the cases reported in the world literature symptomatic measures have been employed during the acute stage and supportive measures in the convalescent period. Local diathermy, infra-red and roentgen rays have been employed.[10]

The evaluation of any method of treatment of brucellosis is difficult because the periods of fever which characterize the condition occur irregularly, and febrile periods alternate with long afebrile pauses. Instances of spontaneous recovery or remission are numerous. Furthermore, many workers believe that the manifest form of brucellosis may pass into a latent asymptomatic one. Since the etiologic agent is seldom isolated in any specific case, the validity of a diagnosis that rests only on the presence of a febrile syndrome and brucella agglutinins may be open to question. Nevertheless their presence gives strong presumptive evidence of the existence of the disease.

In 1936 Prickman and Popp[11] reported the first cases of undulant fever in which physically induced hyperpyrexia was employed, and in 1938 Prickman, Bennett and Krusen[12] reported a series of 21 cases so treated, with seventeen "cures" and four failures.

From the Division of Medicine (Dr. Prickman) and the Section on Physical Therapy (Dr. Krusen), Mayo Clinic.

1. Kulowski, Jacob, and Vinke, T. H.: Undulant (Malta) Fever Spondylitis: Report of a Case Due to Brucella Melitensis, Bovine Variety, Surgically Treated, J. A. M. A. **99**: 1656-1659 (Nov. 12) 1932.

2. Bishop, W. A., Jr.: Vertebral Lesions in Undulant Fever, J. Bone & Joint Surg. **21**: 665-673 (July) 1939. Kulowski, Jacob: Undulant (Malta) Fever Osteomyelitis and Arthritis, Surg., Gynec. & Obst. **62**: 759-763 (April) 1936. Snyder, C. H.: Spondylitis in Undulant Fever: A Report of Two Cases, J. Michigan M. Soc. **34**: 224-228 (April) 1935. Steindler, Arthur: Orthopedic Complications of Brucellosis, J. Iowa M. Soc. **30**: 256-257 (June) 1940.

3. Palagi, Piero: Le localizzazioni vertebrali nella febbre ondulante, Chir. d. org. di movimento. **20**: 31-56, 1934.

4. Todd, M. L.: Two Cases of Malta Fever Treated with Mercurochrome, Mil. Surgeon **61**: 34-35 (July) 1927.

5. Thurber, D. S.: The Results of the Use of Acriflavine Hydrochloride in the Treatment of Undulant Fever, Canad. M. A. J. **23**: 665-668 (Nov.) 1930.

6. Fortney, A. C.: Undulant Fever Treated with Metaphen, Minnesota Med. **16**: 335 (May) 1933.

7. Neumann, C. Z.: Treatment of Undulant Fever with Prontosil, Brit. M. J. **2**: 342-344 (Aug. 13) 1938.

8. Ervin, C. E., and Hunt, H. F.: The Diagnosis and Treatment of Undulant Fever, J. A. M. A. **109**: 1966-1971 (Dec. 11) 1937. Carpenter, C. M., and Boak, Ruth A.: The Treatment of Human Brucellosis: A Review of Current Therapeutic Methods, Medicine **15**: 103-127 (Feb.) 1936.

9. Flippin, H. F.: Treatment of Undulant Fever: A Report of Five Cases Treated with a Specific Polyvalent Serum, Ann. Int. Med. **12**: 232-235 (Aug.) 1938. Angle, F. E.: Treatment of Acute and Chronic Brucellosis (Undulant Fever), J. A. M. A. **105**: 939-942 (Sept. 21) 1935. Feldmann, L.: Physical Treatment in Brucellosis, Brit. J. Phys. Med. **12**: 157 (Nov.) 1937.

10. Izar, Guido, and Moretti, Pasquale: Die Wirkung der kurzen Wellen auf den Verlauf des Maltafiebers, Klin. Wchnschr. **14**: 46-47 (Jan. 12) 1935.

11. Prickman, L. E., and Popp, W. C.: Treatment of Brucellosis by Hyperpyrexia Induced by the Simpson-Kettering Hypertherm, Proc. Staff Meet., Mayo Clin. **11**: 506-510 (Aug. 5) 1936.

12. Prickman, L. E.; Bennett, R. L., and Krusen, F. H.: Treatment of Brucellosis by Physically Induced Hyperpyrexia, Proc. Staff Meet., Mayo Clin. **13**: 321-328 (May 25) 1938.

None of these patients had osseous lesions. Since 1938 3 patients who had brucellosis spondylitis have been treated by physically induced hyperpyrexia at the Mayo Clinic. We here present reports concerning these 3 patients (1) because brucellosis is infrequently considered clinically as a possible cause of infectious spondylitis and (2) because of the gratifying results we obtained with the treatment we employed.

The effect of hyperpyrexia on the treatment of brucellosis has never been satisfactorily explained. Certainly elevation of the temperature alone is not the cause of the cure, because Thompson, Sheard and Larson [13] showed that the organisms which cause brucellosis are not killed in vitro at a temperature of 107 F. sustained for a period of twenty-four hours. It has been suggested that the effect of hyperpyrexia is one of activation or heightening of the intrinsic protective mechanism of the body.

The procedure arbitrarily employed at the clinic in the administration of this treatment is as follows: Three sessions of fever are given, separated by an interval of three days and with a sustained rectal temperature of 105 to 106 F. for five hours; the patient is kept in the hospital during the period of treatment (Elkins and Krusen [14]).

REPORT OF CASES

CASE 1.—A white man aged 50, a lawyer, admitted to the clinic on March 8, 1938, stated that in September 1937 he had experienced the sudden onset of fever and chills and had simultaneously experienced a pain in the lower part of his back which had persisted unabated ever since. He said that his back was very stiff and painful on motion. There was some extension of pain to the groins, but sciatica was not present. Pain interfered with his sleep at night. Anorexia was pronounced, and the patient stated that he had lost 15 pounds (7 Kg.) since the onset of his illness. A low grade fever in which his temperature had ranged from 99 to 100 F. had been present since September 1937. He had been drinking unpasteurized milk.

The patient on admission was pale and somewhat poorly nourished. His back was flat, with loss of normal lumbar lordosis. The paravertebral muscles were spastic, motions of the lumbar portion of the spinal column were limited to

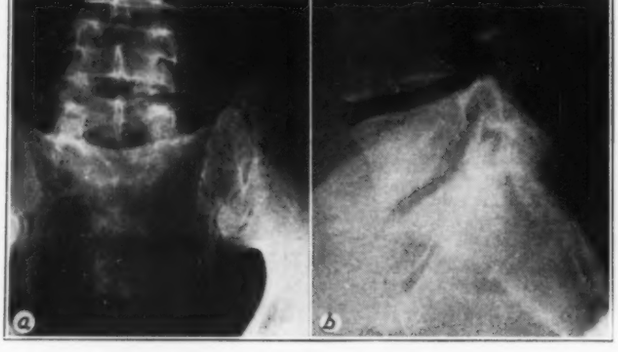

Fig. 1 (case 1).—Brucellosis spondylitis at time of admission: *a*, anteroposterior view and *b*, lateral view of lumbar vertebrae, showing destruction of the posterior inferior border of the fifth lumbar vertebra, with narrowing of the lumbosacral interspace.

grade 3 (on a basis of 1 to 4) and tenderness was present over the sacrovertebral juncture.

Results of urinalysis and the flocculation test for syphilis were negative; the content of hemoglobin was 13.3 Gm. per hundred cubic centimeters, the sedimentation rate was 111 mm. in one hour (normal rate 20 mm. or less in one hour) and the result of the agglutination test for the organisms of brucellosis was positive in a dilution of 1:1,280. A roentgenogram of the thorax was reported as being negative. Roentenograms of the lumbar portion of the spinal column were reported to show "some destruction of the posterior inferior

Fig. 2 (case 1).—Brucellosis spondylitis five months after admission: *a*, anteroposterior view and *b*, lateral view of lumbar vertebrae, showing advanced repair of the destructive lesion.

border of the fifth lumbar vertebra with narrowing of the lumbosacral joint space" (fig. 1 *a* and *b*).

The patient was admitted to the hospital and received one treatment in the Kettering hypertherm; a sustained rectal temperature of 105 F. was maintained for five hours. Two days later a second treatment was started but had to be discontinued because of blistering of the skin over the anterior costal margins. No further treatment was administered at this time.

Following the first treatment, the patient obtained much relief from the pain in the lower part of his back. He himself stated that the relief seemed unbelievable. He was kept in the hospital for nine days. His temperature remained normal after the fourth day.

One month later he returned to the clinic for examination. It was noted at this time that normal lumbar lordosis had been restored; tenderness was much diminished over the sacrovertebral juncture; but persistent spasm of the paravertebral muscles was present and there was some slight limitation of motion of the lumbar portion of the spinal column. The patient had gained 5 pounds (2 Kg.) and was practically symptom free. Roentgenograms of his spinal column showed destructive arthritis to be less in extent than had been the case when the previous roentgenograms were made. He received at this time one fever treatment in the Burdick cabinet; rectal temperature was maintained at 105 F. for five hours.

The patient was last seen in July 1940, at which time he felt entirely well. He had gained 15 pounds (7 Kg.). Motions of the lumbar portion of his spinal column were very free; he was able to touch the floor with his fingertips without bending his knees. Roentgenograms of the spinal column revealed an advanced reparative process of the destructive lesion, with almost normal restoration of the vertebra involved (fig. 2 *a* and *b*).

CASE 2.—A white man aged 52, an agent for an oil company, admitted to the clinic on July 20, 1939, complained of pain and stiffness of the dorsal and lumbar portions of his spinal column. He stated that he had first noticed a "catch in his back" one and a half years previous to the time of consultation; it was felt usually after a long automobile ride. He had been in bed for a few days in the fall of 1938 because of rather severe backache. He had never experienced sciatica and usually had obtained prompt relief from the pain in his back by resort to rest in bed. In February 1939 he had had a severe chill; his temperature had increased to 105 F. Since 1939 he had had recurrent bouts of fever, which alternated with periods of normal temperature. The fever had not been

13. Thompson, Luther; Sheard, Charles, and Larson, Nora: The Effect of Heat at 107 F. (41.8 C.) on Various Bacteria, Proc. Staff Meet., Mayo Clin. **11**: 319-320 (May 13) 1936.

14. Elkins, E. C., and Krusen, F. H.: Clinical Results of Fever Therapy, Arch. Phys. Therapy **20**: 346-353; 376 (June) 1939.

altered by a course of sulfanilamide prescribed by his physician at home. The pain in his back usually felt better immediately after an episode of high fever. He had lost 20 pounds (9 Kg.) during the year and a half prior to his coming to the clinic. He commonly drank unpasteurized milk.

On physical examination the patient was seen to have flattening of the entire back, with rather severe paravertebral muscular spasm. Motions of the thoracic and lumbar portions of the spinal column were limited to grade 3 in all directions. There was slight tenderness over the sacrovertebral juncture and also tenderness in the thoracolumbar region. Chest expansion was 2 inches (5 cm.).

Results of urinalysis and the flocculation test for syphilis were negative; the content of hemoglobin was 14.8 Gm. per hundred cubic centimeters; leukocytes numbered 11,000; the sedimentation rate was 42 mm. in one hour; results of the agglutination test for the organisms of typhoid and paratyphoid fever were negative, but results of the agglutination test for the organisms of brucellosis were positive in a dilution of 1:640. Roentgenograms of the thoracic and lumbar portions of the spinal column showed only localized hypertrophic changes of the ninth and tenth thoracic vertebrae, with calcification of the intervertebral disks of the ninth and tenth and the tenth and eleventh thoracic vertebrae. Results of a roentgen examination of the thorax were reported as being negative.

The patient was admitted to the hospital for fever treatment. On two days a sustained rectal temperature of 105.4 F. was maintained in the Kettering hypertherm for five hours each day. Following these two treatments the patient felt entirely relieved of pain in his back; he refused to submit to the third fever treatment of the series, although it was recommended.

One week after returning to his home in Texas the patient experienced a recurrence of the pain in his back. He returned at once to the clinic and submitted to a series of three more treatments in the Kettering hypertherm. During each treatment a sustained rectal temperature of from 105.2 to 105.4 F. was maintained for a period of five hours. Following this series of treatments he again felt entirely well and at the time of this writing had had no recurrence of symptoms of spondylitis.

CASE 3.—A white man aged 20, unemployed, who was admitted to the clinic on Dec. 14, 1939, complained of recurrent attacks of pain in the lower part of the back which had lasted two to three weeks and which had occurred for a period of two years prior to the time of his coming to the clinic. The attack

Fig. 3 (case 3).—Brucellosis spondylitis: *a*, at time of admission; lateral view of lumbar vertebrae showing destructive changes of the third lumbar vertebra and compression and wedging of the second lumbar vertebra with narrowing of the second lumbar interspace; *b*, lateral view of lumbar vertebrae six weeks later.

with which he was afflicted at the time of his examination had begun six weeks previously, with severe aching and pain; he had been forced to go to bed and was unable to walk because of pain. At this time he had had a temperature as high as 104 F. and the fever was known to have persisted for the five weeks prior to the time of consultation. He was in the habit of drinking raw milk.

On physical examination the patient was seen to have a very flat back, with suppression of side motion and flexion referable to paravertebral muscular spasm. Raising of the leg with the knee extended was limited bilaterally. There was not much tenderness on percussion over the spinal column.

Results of urinalysis and the flocculation test for syphilis were negative; leukocytes numbered 7,300 and erythrocytes

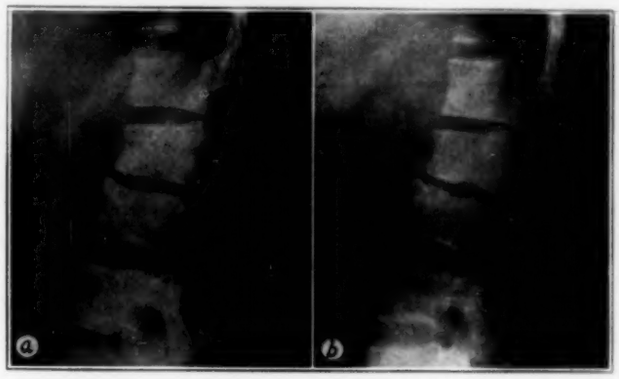

Fig. 4 (case 3).—Brucellosis spondylitis: *a*, lumbar vertebrae immediately following second course of physical fever; roentgenogram made at a date ten days later than the date on which the roentgenogram in figure 3 *b* was made; *b*, appearance four months after second course of physical fever, showing healing of the destructive lesion of the third lumbar vertebra and increased narrowing of the second lumbar interspace.

4,260,000; the content of hemoglobin was 12.4 Gm. per hundred cubic centimeters; the sedimentation rate was 65 mm. in one hour; results of the agglutination test for the organisms of brucellosis were positive in a dilution of 1:1,280. Roentgenograms of the lumbar portion of the spinal column revealed destructive changes in the third lumbar vertebra and compression and wedging of some extent of the second lumbar vertebra, with narrowing of the second lumbar interspace (fig. 3 *a*).

The patient was admitted to the hospital and received three treatments in the Kettering hypertherm; on Dec. 20, 1939 a sustained rectal temperature of 105 F. was maintained for three and a half hours; on December 22 a similar temperature was maintained for five hours, and on December 26 a rectal temperature of 102 to 102.6 F. was maintained for four hours. The excessively high pulse rate (168) accompanying the temperature of 102.6 F. during the last treatment made it inadvisable to attempt to obtain any higher elevation of the temperature at that time.

Following this series of treatments the patient stated that the pain in his back was much relieved. Motion in the lumbar portion of his spinal column was increased 50 per cent as compared to the motion present at his admission. However, some degree of limitation in flexion and some pain in the lower part of the back remained. At dismissal he was wearing a Taylor brace.

The patient returned to the clinic on Jan. 29, 1940. He stated that he had been afebrile until one week prior to his return, at which time he had begun to suffer from a sore throat. He then had experienced fever for the ensuing four days. He was afebrile on admission. Because he still had pain in the lower part of his back (fig. 3 *b*) he was admitted to the hospital, where he received two more fever treatments. The first was administered on Feb. 2, 1940 and the rectal temperature was maintained at 105.2 F. for five hours. The second treatment was administered on February 5 and the rectal temperature was maintained at 104.2 to 104.8 F. for five hours.

Although the patient felt much improved after these treatments, it was thought advisable to immobilize his back in a plaster jacket. He wore this jacket for eight weeks.

At the time of writing of this report, the patient had remained symptom free since February 12 (fig. 4 *a*). On June 18 a roentgenogram of the spinal column revealed that the involved region had healed without fusion and with only moderate narrowing of the disk in the second lumbar interspace (fig. 4 *b*).

COMMENT

We fully realize that the accuracy of the diagnosis in these 3 cases may be open to some question. The diagnosis in each case is based chiefly on the presence or history of remittent fever, the local signs and symptoms of spondylitis, a high sedimentation rate and the presence of a high titer of specific agglutinins for brucella organisms in the patients' blood. That spondylitis in these 3 cases was caused by the brucella infection is more or less proved (1) by the fact that prompt remission of the symptoms of spondylitis occurred in each case following fever therapy, (2) by the fact that this therapy has been shown to be effective in most cases of brucellosis without bony lesions in which the treatment has been employed at the clinic. Furthermore, evidence that the organisms of brucellosis were present in the 3 cases presented herein is adduced by negative exclusion: physically induced hyperpyrexia has not been effective in control of the symptoms of the common forms of spondylitis, either the atrophic or the hypertrophic types, in which the organisms of brucellosis are not the causative agents.

On the basis of the small series of cases reported here it could not be stated that employment of fever therapy hastens the healing of pathologic lesions in the spinal column in the condition under consideration; but certainly the great diminution in the extent of pain in the back and the lessening of the paravertebral muscular spasm following this treatment would lead to the conclusion that the infectious process was at least arrested by such therapy. The prompt relief which immediately followed the fever treatment in each of these 3 cases could scarcely be said to have been the result solely of coincidental spontaneous remission.

It is recognized that, even if no special treatment is employed, the prognosis as to ultimate healing in brucellosis spondylitis is good. We believe, however, that physically induced fever was of very definite value in the management of the 3 cases previously mentioned. To our knowledge, no patient suffering from brucellosis spondylitis has been so treated previous to this report.

SUMMARY

In 2 of 3 cases of brucellosis spondylitis destructive lesions of the spinal column were present and in 1 the clinical signs and symptoms of acute spondylitis without any significant bony changes were observed. All the patients made a recovery, with demonstrable repair of the bony lesions in 2 cases after a course of physically induced hyperpyrexia.

He Touched Fame and Never Knew It.—Curiously, sulfanilamide waited idly on the laboratory shelves for more than twenty years before its faculty of routing microbes was discovered. It is a synthetic compound, derived from coal tar, and was first made by a young chemist, P. Gelmo, student at a university in Vienna. His synthesis of the substance was published in 1908 in a German chemical journal. The report was offered as thesis in his candidacy for the doctor's degree. Probably no student ever contributed so much in exchange for a doctorate, though neither Gelmo, nor his teachers, nor any contemporary scientist saw anything extraordinary in the addition of one more to the hundreds of derivatives from coal tar. . . . Having achieved his synthetic, Gelmo dropped back into obscurity. Nobody knows what became of him. The files of scientific journals have been searched, and there is no record of any subsequent publication in his name. He touched fame and never knew it.—Gray, George W.: The Advancing Front of Medicine, New York, McGraw-Hill Book Company, Inc., 1941.

PRIMARY CARCINOMA OF THE BRONCHUS

AN ANALYSIS OF FIFTY-SIX CASES

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During the past eight years we have observed 56 histologically proved cases of bronchiogenic carcinoma; 37 came to necropsy (an incidence of 2.5 per cent of all necropsies in this period), and in the remaining 19 the antemortem diagnosis was established by biopsy. We have evaluated the clinical and pathologic features of this material.

CLINICAL FEATURES

Age and Sex.—As may be seen in table 1, 88 per cent of the patients were men and the average age was 56, with the youngest patient 30 years of age.

Duration of Illness.—The average interval (table 2) from the onset of the present illness to hospitalization was six and six-tenths months, and the average duration from hospitalization until the time of death three and one-tenth months later. It is apparent, therefore, that the disease on the average had consumed two thirds of its span before hospitalization occurred. Moreover, in 22 cases, or almost 40 per cent, the duration of life in this second phase was one month or less. Such figures, we think, indicate the urgent need for an intensive "early diagnosis" educational campaign.

TABLE 1.—*Age and Sex of Patients*

	Total Number	Percentage
Race: White	54	98
Colored	2	2
Sex: Male	49	88
Female	7	12
Age: Average	56 years	
Youngest	30 years	
Oldest	70 years	

TABLE 2.—*Duration of Illness*

	Average	Minimum	Maximum
From onset to hospitalization	6.6 months	1 week	24 months
From hospitalization to death	3.1 months	1 day	27 months

Symptoms and Signs.—The symptoms prior to admission ranged from an acute onset of one week's duration to a maximum of two years. In a significant number, 17 cases, or 30 per cent, the onset was atypical. In 5 instances the symptomatology mirrored an acute respiratory episode. The diagnosis on admission was pneumonia in 4 cases and spontaneous pneumothorax in the fifth. The remaining 12 cases were atypical in that the outstanding symptoms were related to metastatic foci and dominated the clinical story.

The usual mode of onset was insidious (table 3). Cough is by far the most common symptom (91 per cent) and one of the earliest. It is often productive

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and may occasionally have a "brassy" quality; 7 patients had foul expectoration associated with secondary abscess formation. Dyspnea was noted in 59 per cent, and one half of our patients complained of thoracic pain, which occasionally radiated to the shoulder, axilla or arm. As a rule its severity increased as the disease progressed. Frank hemoptysis or blood streaked sputum appeared in 41 per cent and wheezing in 10 per cent. Weakness and weight loss as constitutional manifestations of cancer were noted in 87 per cent. The majority of patients also showed fever during at least part of their hospital sojourn.

The most common abnormal physical signs elicited over the lungs were limitation in motion of the affected hemithorax and dulness or flatness with diminished or absent breath sounds. Occasionally local pressure was evidenced by dysphagia (16 cases), hoarseness (3 cases) or a Horner's syndrome (1 case). We observed central or peripheral nervous system manifestations in 15 cases. Enlarged superficial glands were noted 19 times. In the order of their frequency, the groups of lymph nodes were cervical 7, inguinal 5, supraclavicular 4 and axillary 3. The liver was enlarged in 12 instances. Effusion into the pleural cavity was often noted, and thoracenteses were done in 11 cases. Other findings included distention of superficial veins in the thorax or neck in 4 cases, edema of the face and neck in 4 cases and unilateral edema of the extremities in 3 cases.

DIAGNOSIS

The antemortem diagnosis of bronchiogenic carcinoma can be facilitated by x-ray studies and biopsy procedures. There is no roentgenologic shadow which is absolutely pathognomonic for bronchial carcinoma, but the most commonly encountered appearance is that

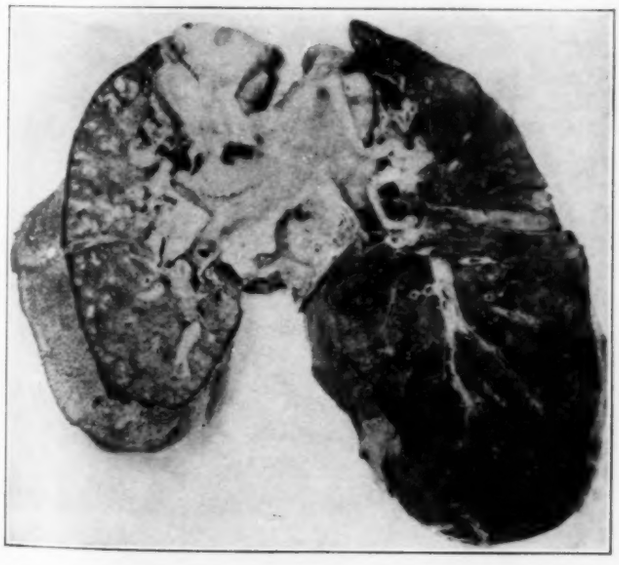

Fig. 1.—Carcinoma of the left main bronchus with extension to the superior sulcus area. There is secondary atelectasis and bronchiectasis of the left lung.

of a unilateral density which radiates outward from the hilus. As the disease progresses this density usually becomes lobar or multilobar in extent. The predominant clinical picture and the postmortem findings indicate that inflammatory changes involving the parenchyma and the bronchi occur distal to the tumor mass, and it is these changes together with pleural involvement which contribute largely to the roentgen opacity. Forty cases were considered as showing this combination of pathologic events. It is interesting to report also that in 7 instances a definite abscess cavity

Fig. 2.—Carcinoma arising in the periphery of the lung.

was noted on the film. Mediastinal widening was seen in 9 cases. One patient had a spontaneous pneumothorax on the side of the tumor.

The basic classification of primary bronchial cancers by Rabin and Neuhof [1] into hilar and peripheral is simple and practical, especially as concerns operability. Some may prefer, as Jaffé [2] has done, to include another anatomic subdivision; namely, tumor arising from a bronchus which occupies an intermediate position between the main bronchus and its finer divisions. In 10 of the 56 cases no chest roentgenograms were available for study. Of the remaining 46 cases the distribution was as follows: hilar or noncircumscribed type (fig. 1), which arise from the main or first division bronchi, 42 cases, or 91 per cent; peripheral or circumscribed type (fig. 2), situated within the parenchyma but which pathologically take origin from smaller bronchi or bronchioles, 3 cases, or 7 per cent; and diffuse nodular carcinomatosis (involving both lungs), 1 case, or 2 per cent. Utilizing all available data, the right side was involved in 30 cases, or 53 per cent, and the left in 25 cases, or 45 per cent; the remaining case, as mentioned, was of the diffuse type. In 5 cases pulmonary tuberculosis was also noted, 3 with quiescent productive infiltration and 2 with cavitation.

Bronchoscopy with biopsy is probably the most important single procedure for diagnosis. Of the total

1. Rabin, C. B., and Neuhof, Harold: A Topographic Classification of Primary Cancer of the Lung: Its Application to the Operative Indication and Treatment, J. Thoracic Surg. **4**: 147 (Dec.) 1934.

2. Jaffé, R. H.: Primary Carcinoma of the Lung, J. Lab. & Clin. Med. **20**: 1227 (Sept.) 1935.

of 56 cases, bronchoscopy was performed in 24, or 43 per cent, and in these gross abnormal changes and a positive biopsy section for cancer were noted in 19, or 79 per cent. It is important to remember that negative findings do not rule out intrabronchial disease, for the lesion may be beyond the vision of the bronchoscopist.

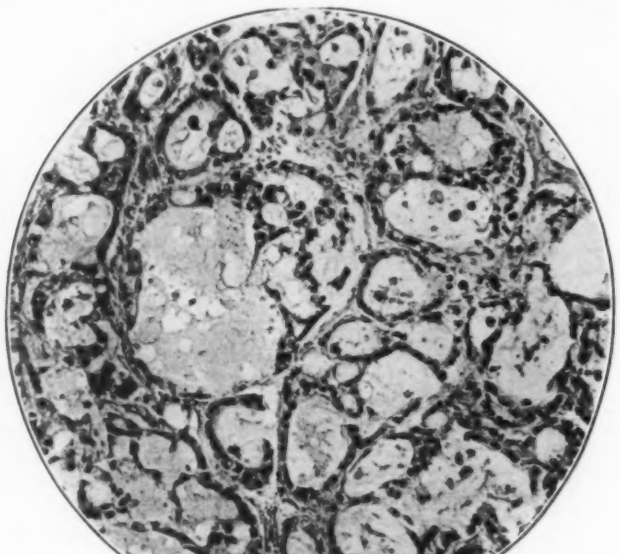

Fig. 3.—Superior sulcus tumor. Parenchyma invaded by numerous glands lined by mucous cells.

In 2 of our cases aspiration biopsy of the lung showed evidence of neoplastic changes on microscopic section. In 4 instances the diagnosis of carcinoma was corroborated by microscopic study of metastatic cervical or supraclavicular nodes. Our experience in finding tumor cells within pleural fluid has been disappointing.

TABLE 3.—*Symptoms and Signs*

	Total Number	Percentage
Cough	50	91
Sputum *	40	71
Dyspnea	33	59
Chest pain	28	50
Hemoptysis	23	41
Wheezing	6	10
Weakness	47	84
Weight loss	47	84
Dysphagia	6	10
Hoarseness	3	5
Neurologic changes	15	26
Lymphadenopathy	19	34
Hepatomegaly	12	21
Superficial veins	4	7
Edema of face and neck	4	7
Unilateral edema of extremities	3	5
Horner's syndrome	1	2

* Seven patients had foul sputum.

In 3 patients whose hospitalization period was twenty-four hours or less the diagnosis was made only at autopsy. In 9 other cases incorrect final antemortem impressions were gastrointestinal cancer (probably of the stomach) with metastases in 5 cases, hypertensive or arteriosclerotic heart disease with decompensation in 2 cases, postpneumonic empyema with bronchopleural fistula in 1 case and Hodgkin's disease in 1 case. Thus an accurate diagnosis checked by histologic section was established clinically in the remaining 44 cases, or 80 per cent of the entire series.

THERAPY

In 7 cases of the 56, or 12 per cent, roentgen or radium therapy or both were employed with no beneficial effect. One patient was suitable for a lobectomy, but death occurred from postoperative shock.

HISTOPATHOLOGY

The pleomorphic features of primary carcinoma of the bronchus render any histologic classification difficult. We have endeavored to group our tumors under four headings: epidermoid, adenocarcinoma, undifferentiated and mixed types. Epidermoid carcinoma includes those tumors which possess squamous characteristics, with or without pearls or keratin formation. Adenocarcinomas are those tumors which form glands (fig. 3). Mixed tumors form glands and in areas show squamous characteristics. The undifferentiated type includes the anaplastic, small or large round cell, the "oat cell" and the spindle cell tumors (fig. 4). Though we have found this classification to be practical, it is to be emphasized that many sections from various areas are necessary before a microscopic diagnosis can be ventured. It is for this reason that the remarks on histopathology are limited to the 37 cases that came to autopsy.

Normally the bronchi are lined with several rows of four distinct types of cells,[3] namely ciliated, goblet, intermediate and basal cells. As the epithelium extends into the bronchioles, the mucosa is thinned out and the ciliated greatly outnumber the goblet cells, which completely disappear in the smaller bronchioles. The lining cells of the prealveolar bronchioles assume a cuboidal shape and form a single layered mucosa with occasional basal cells. This epithelium extends into the pulmonary

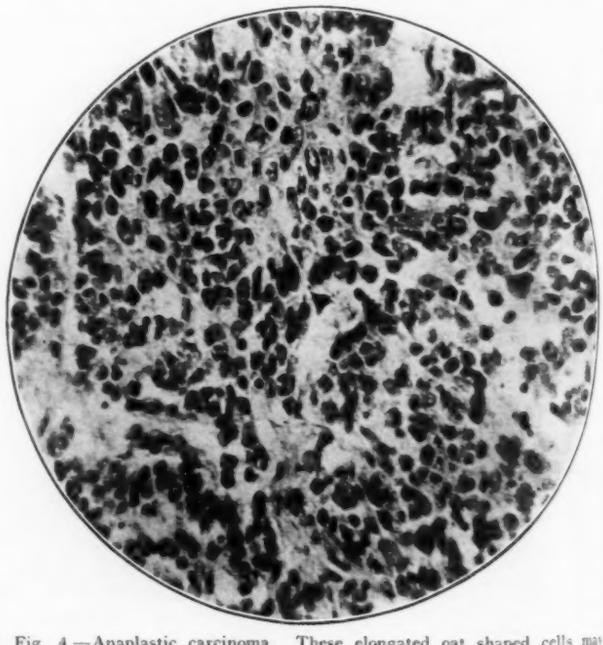

Fig. 4.—Anaplastic carcinoma. These elongated oat shaped cells may be mistaken for spindle cell sarcoma.

alveoli, where it appears as a thin continuous layer of flattened nucleated epithelium. The alveolar epithelium, as pointed out by Konzelmann,[4] shows no power of regeneration or multiplication when destroyed, and very

3. Miller, W. S., in Cowdry, E. V.: Special Cytology, ed. 2, New York, Paul B. Hoeber, Inc., 1932, vol. 1, p. 133.
4. Jackson, C. L., and Konzelmann, F. W.: Bronchial Carcinoma, J. Thoracic Surg. 4: 165 (Dec.) 1934.

likely a new lining membrane is formed from the basal cell of the bronchioles. The basal cell is the least differentiated and therefore possesses various potentialities for growth and cell differentiation. This postembryonic cell differentiates normally into goblet and ciliated epithelium, as emphasized by Fried.[5] Weller[6] believes that its autonomous growth is responsible for the vast majority of lung carcinomas.

Group 1, or epidermoid carcinoma, consisted of 23 cases, or 62 per cent of the total. There were local metastases in regional lymph nodes in 95 per cent and distant metastases in 61 per cent of the cases. Of the latter, the liver was involved 9 times, the myocardium 4, the kidney 4 (one bilateral), the adrenal 6, and the pancreas, ribs and sternum once each.

Group 2, or adenocarcinoma, 4 cases in all, represented 11 per cent of our series. All, or 100 per cent, had local and only 1, or 25 per cent, distant metastases. This case involved the liver, adrenals, abdominal lymph nodes, lower vertebrae, ileum, pubis and femur.

In group 3, or the undifferentiated type of carcinoma, there were 9 cases, or 24 per cent of the total. Local metastases were present in 100 per cent and distant metastases in 88 per cent of the cases. The liver was involved four times and the kidney, adrenal, pericardium and mesenteric lymph nodes once each.

Group 4, or the mixed type, is represented by a single patient (3 per cent of the series), who had regional and distant metastases with involvement of the pericardium, myocardium and kidneys.

No definite correlation was noted in our series of cases between the clinical course, the duration of life and the histopathologic type of the tumor.

An effusion on the same side as the tumor was noted in 59 per cent of these cases. The character of the fluid was serous in 59 per cent, grossly bloody in 23 per cent and frankly purulent in 18 per cent. It is noteworthy that a sanguineous effusion, which is so commonly described as a classic finding, was relatively infrequent in our series.

SUMMARY

1. Primary carcinoma of the bronchus has shown a decided increase in recent years. We have made an analysis of 56 histologically proved cases encountered during the last eight years, 37 of which were confirmed by autopsy and 19 by biopsy. A correct antemortem diagnosis was made in 80 per cent.

2. The high incidence in males was particularly noteworthy. While the usual mode of onset was an insidious one, 30 per cent showed an atypical onset.

3. The cases have been classified from a roentgenologic point of view into three groups: hilar, peripheral and diffuse nodular carcinomatosis. From a histopathologic point of view the 37 cases that come to autopsy were listed as epidermoid carcinoma, adenocarcinoma, undifferentiated carcinoma and mixed type. No significant correlation was noted in our series between the clinical course and the histology of the tumor.

4. The present outlook indicates that thoracic surgery (lobectomy or more often pneumonectomy) offers the best chance for cure. The clinician must contribute his acumen by endeavoring to make a diagnosis of cancer of the lung sufficiently early to permit therapeutic intervention.

5. Fried, B. M.: Primary Carcinoma of the Lung, Baltimore, Williams and Wilkins Company, 1932.
6. Weller, C. V.: The Pathology of Primary Carcinoma of the Lung, Arch. Path. **1**: 478 (March) 1929.

SPLENECTOMY IN MEDICAL PRACTICE

REPORT OF THIRTEEN SPLENECTOMIES

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It has long been recognized that removal of the spleen of man is compatible with a long and healthy life. The spleen, owing to its location and movement with respiration, has been an easy organ to palpate, and it has been found enlarged in many different types of disease processes. The constancy of enlargement of the organ and the lack of any specific etiologic factor for the blood dyscrasias associated with splenomegaly have led to much speculation about the part played by the spleen in the production of these diseases. Recognition of the almost 100 per cent mortality in many of the blood dyscrasias and the lack of any specific therapeutic agent with which to combat these diseases led many of the earlier physicians to resort to removal of the spleen, with the hope that improvement might follow. Much information has been gained by the empirical removal of the spleen. Removal has been shown to have beneficial and probably curative effects in certain of the blood dyscrasias which fail to improve with all known therapeutic agents up to the present time. Other blood dyscrasias, however, have shown no improvement following removal of the spleen, and some seem definitely to have been made worse. With the renewed interest in splenectomy following the rather spectacular results obtained in cases of idiopathic purpura hemorrhagica, it has seemed wise to me to review a few of the facts that are known about the spleen and to state the difficulties encountered in the accurate diagnosis of the diseases benefited by splenectomy. If splenectomy is a beneficial therapeutic agent, then one must recognize the clearcut indications for its use as well as some of the dangers. It is also of greatest importance to recognize, after careful consideration of the functions of the spleen, that the improvement which follows splenectomy is still unexplainable.

FUNCTIONS

The functions of the spleen have been, to say the least, very vague. There are, however, certain functions which have been fairly well worked out, and the following are the most common functions ascribed to the spleen:

1. The spleen as a hemopoietic organ. It has long been known that the spleen in the embryo, along with the liver, assumes the chief role in the production of the cells of the blood. At birth this function is lost to the spleen and liver and is taken over by the bone marrow of the flat bones of the body and the vertebrae. In times of stress the spleen is thought to be able to reassume this function in adults. Normally in adults the spleen is thought to supply lymphocytes and monocytes to the general circulation. The large numbers of reticuloendothelial cells in the spleen are thought by some to play some role in the fat metabolism of the body, especially that of cholesterol. They are also in some way thought to take part in the production of antibodies, but the mechanism is extremely uncertain.

2. The spleen has been assumed for years to be the organ most actively involved in the destruction of the red blood cells. Experimentation, however, does not fully bear out this view. Blood drawn from the splenic

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artery and vein fails to show in the hands of many investigators any difference in urobilinogen content, which would be the case if active destruction took place in the spleen. Special stains have also failed to demonstrate any increase in the iron content of the spleen which would be likely to follow if the red cells were destroyed in the spleen. There is also extremely slight evidence that there is active phagocytosis of the red cells in the spleen. Phagocytosis in the endothelial cells of the spleen has been shown for both red and white cells but not to a sufficient degree to make this a great function of the spleen. It has been supposed in cases of purpura hemorrhagica that the spleen destroys the platelets too rapidly, but no evidence for this has been demonstrated in the spleens removed from patients with purpura hemorrhagica. No pathologic alteration has been noted in the spleens removed from patients with the aforementioned condition. In the case of congenital hemolytic jaundice, the red cells have an alteration in their resistance to salt solution, hemolyzing at higher salt concentrations than normal blood cells. They also tend to change their shape and become what is commonly termed spherocytes. Removal of the spleen, however, does not always change the fragility test or the shape of the cells present, but the patients are definitely improved or cured following splenectomy.

3. The great vascularity of the spleen has been long known, and one of the common functions ascribed to the spleen is its ability by its rhythmic contractions to regulate the blood flow of the gastrointestinal track during digestion. In extreme oxygen want, as seen in severe anemias, at high altitudes and in carbon monoxide poisoning, the spleen pours out its reserve red cell supply to meet the emergency.

4. Naegele has for years suggested that the spleen in some as yet unknown way has a hormonal action. He suggested that some substance is liberated in the spleen which has a hemming action on the bone marrow. Removal of the spleen permits overactivity of the bone marrow and an outpouring of immature cells of the red and white series and the platelets into the peripheral circulation. This is what actually happens when one removes the spleen of a patient afflicted with purpura hemorrhagica, congenital hemolytic icterus, or, in a few cases, splenic anemia. The histologic structure of the spleen obtained at operation in these three conditions shows no definite structural changes which are characteristic and which would tend to throw light on the local mechanism as an etiologic factor for the diseases. At the present time it seems to me that the spleen, if active in producing these diseases, does so by some internal secretion which hems the action of the bone marrow, or by the destruction or alteration of some chemical constituent of the blood which normally stimulates the bone marrow.

DIAGNOSIS

From this discussion it appears evident that removal of the spleen is not based on any sound physiologic or pathologic basis but rather on the clinical observation that patients afflicted with congenital hemolytic jaundice, idiopathic purpura hemorrhagica and anemia resulting from obstruction of the splenic vein improve when the spleen is removed. In the absence of any better and simpler therapeutic agent for the treatment of these diseases I resort to removal of the spleen. Since these three conditions are the ones in which one might look for improvement following splenectomy, one must be as nearly right as possible in one's diagnosis before resorting to the operation, which is still a serious operation even in the hands of expert surgeons. A few important points for the diagnosis of each of the three mentioned conditions are the following:

1. The diagnosis of congenital hemolytic jaundice is made from the clinical history and the following laboratory procedures:

(*a*) A severe anemia complicated with jaundice is present with red blood cells that tend to be microcytic and are termed spherocytes. Reticulocytes are increased in number and nucleated red blood cells are often found in the peripheral circulation. The white blood cell count is usually slightly elevated.

(*b*) The most important laboratory finding in this disease is the alteration in the fragility test. Normally red blood cells hemolyze in salt concentrations ranging from 0.42 to 0.34 per cent sodium chloride. In congenital hemolytic jaundice the hemolysis begins at higher concentrations, as 0.50 per cent sodium chloride. This alteration in fragility does not always disappear after removal of the spleen, but in spite of its persistence the patient improves clinically.

(*c*) The icteric index is increased and the van den Bergh test shows an increase in the indirect reaction. A positive direct van den Bergh reaction means that some complication is present.

(*d*) The urine shows an increased amount of urobilinogen with no bilirubin present, while the stools show adequate bile.

(*e*) The tests of hepatic function in the early stages are normal and only in the late stages when complications arise are there any abnormalities noted. Surgery should be resorted to before there is any evidence of damage to the liver.

(*f*) Puncture of the bone marrow in this condition gives further confirmatory evidence by showing a decided preponderance of the erythroid series over the myeloid, though in general the marrow appears hyperactive in both series. There are no abnormal types of cells present which aid in the diagnosis excepting the spherocytes.

2. The diagnosis of idiopathic purpura hemorrhagica is very difficult to make and requires great care. It is important that all forms of symptomatic purpura be excluded. It is also important that other blood dyscrasias which simulate purpura be clearly excluded before splenectomy is done. In addition to the clinical history, the following laboratory procedures aid in the diagnosis of idiopathic purpura hemorrhagica:

(*a*) The simplest procedure is the bleeding time, which may be done by puncturing the finger or ear and collecting drops of blood every few seconds until the cessation of blood flow. Normally this stops in from three to five minutes, while in idiopathic purpura hemorrhagica it is considerably prolonged.

(*b*) The coagulation time, which may be determined simply by means of a capillary tube, shows normal coagulation time in purpura and a considerably prolonged coagulation time in hemophilia.

(*c*) The clot retraction time, which is done by drawing a few cubic centimeters of blood from a vein into a test tube, shows the blood from a patient with purpura hemorrhagica to have lost its power to retract. The clot remains spongy for many hours. In cases of hemophilia the clot retracts slowly but normally.

(*d*) The blood platelets in idiopathic purpura hemorrhagica are considerably diminished. In my experience

the simplest way to count the platelets is on a moist preparation. Brilliant cresyl blue is spread on a slide and a drop of blood is overlayed so that it spreads out evenly. The number of platelets in 1,000 red blood cells are counted and from the value of the red cell count the platelets are calculated. In my experience this is more satisfactory than are the dilution methods or the magnesium sulfate slide method. Normally by this method I find from 250,000 to 350,000 platelets. In cases of purpura hemorrhagica they are noticeably diminished, and when the value falls below 50,000 bleeding tendencies are common.

(*e*) Prothrombin determinations have shown values in most instances which are higher than normal.

(*f*) Blood chemistry determinations have been done for calcium and phosphorus and for nonprotein nitrogen values. The latter eliminates uremia as a cause of symptomatic purpura.

(*g*) Sternal punctures have been done and varying results have been noted. Many feel that in the typical type of idiopathic purpura hemorrhagica there are normal or increased numbers of megakaryocytes found in the bone marrow which show qualitative changes. This in my experience and in the hands of many others has not been the case. I have not found increased numbers of megakaryocytes in my cases of purpura and do not feel that it is obligatory to get those marrow determinations before making the diagnosis. I believe that a marrow puncture should be done in these cases because I wish always to eliminate the two important conditions aplastic anemia and aleukemic leukemia, which are extremely difficult to differentiate from purpura hemorrhagica.

3. Splenic anemia and Banti's disease have been two disease entities for which splenectomy has been widely advocated. They are now recognized to be two stages of the same disease. In addition to the anemia, the frequent hemorrhages associated with the disease have been the reason for the recommendation of splenectomy. It has long been recognized, however, that splenectomy does not stop the bleeding, and many patients have returned with hemorrhages after the spleen has been removed. The recent work of Thompson and Whipple has demonstrated that in this disease syndrome there is an increase in the pressure of the splenic vein which in most instances results from obstruction in the liver or pancreas, but in a smaller number of cases there is no cause found. Their experience with a large number of cases has shown that splenectomy is of value in the cases in which there is no damage to the liver and in which no esophageal varices are present. The ideal type of the disease for operation is that in which there is increased tension of the splenic vein without demonstrable pathologic changes of the liver. This type is very difficult to diagnose before operation. These observations, however, are important and should make one cautious in resorting to radical treatment with splenectomy in this disease. The diagnosis of Banti's disease or splenic anemia must be made largely from the history and the physical examination. The blood findings in contrast to the two previously mentioned conditions are not specific. One usually finds a moderate secondary anemia with a low white blood cell count. The color index is 1 or slightly above, and the red blood cells seem well filled with hemoglobin but are not always of the macrocytic type. There are no specific types of cells in the blood smear which aid in the diagnosis, and the differential tends to show an increase in the lymphocytes. Bone marrow findings are those of a slightly hypoplastic marrow with no abnormal distribution of the blood cells. Gastric bleeding, an enlarged liver and decreased hepatic function have been definite indications for conservative treatment in this type of disorder.

RESULTS

Ten patients have submitted to splenectomy during the past four years at the Presbyterian Hospital and 3 at the Cook County Hospital Hematology Service during the first five months of this year. Six of the 10 patients operated on at the Presbyterian Hospital were definitely diagnosed as having idiopathic purpura hemorrhagica. Five of the 6 patients were girls ranging in age from 12 to 23 years, and the sixth was a youth aged 21.

Three of the girls had severe menstrual bleeding as the most prominent symptom and failed to respond to any form of medical treatment including daily transfusions. It was evident from the course of the disease that a state of remission would be unattainable before operation, and when all the evidence was weighed for and against splenectomy removal of the spleen was decided on. The red blood cell count in all 3 cases was lower than 3,000,000 at the time of the operation, and no platelets could be demonstrated. Immediately after the operation, the patients stopped bleeding and began to show significant increase in the platelets and white blood cells and gradually in the hemoglobin level and red blood count. These 3 patients are still in good health and have had no recurrences.

A fourth girl was very ill, with a count of 2,000,000 red blood cells and profuse bleeding from the uterus, as well as from the nose and gums, which my associates and I were unable to check by frequent transfusions and other medical means. This patient at operation showed well defined adhesions of the spleen to the diaphragm, with profuse bleeding during the operation. The patient left the operating room alive but died several hours later from shock and loss of blood. Autopsy showed much hemorrhage into the diaphragm and peritoneal cavity.

The fifth patient, aged 22, who had a purpuric history which dated back to childhood, showed a few large petechiae as the only symptom at the time she appeared for examination. The hemoglobin content and the red blood cell and white blood cell counts were normal. The platelets on several examinations ranged between 50,000 and 75,000. She was contemplating matrimony in the immediate future and I thought it best to advise splenectomy during the interval of hematologic remission rather than wait for a period of relapse. The patient made an uneventful recovery and has been cured both symptomatically and hematologically since her operation.

The sixth patient with purpura hemorrhagica, the youth aged 21, recovered from the splenectomy and felt well for several months. There was a recurrence of the original symptoms and the patient died about four months after the operation. In the operative notes an accessory spleen is described as being present, but no mention is made about its removal at operation or in the pathologic description.

Thus 4 of the patients with idiopathic purpura hemorrhagica are still living and are well. One died at the operation and 1 died later, possibly of the same disease due to hyperplasia of the accessory spleen noted at the operation but not removed.

Three patients with congenital hemolytic jaundice were operated on and the patients improved at once and are still well. Two interesting facts were noted in 2 of these cases. One patient, a young girl aged 8 years, showed in addition to the usual manifestations a gallbladder full of stones and a considerably diminished liver function test with the rose bengal dye. The van den Bergh test also showed a positive direct reaction and the icteric index was much higher than is usual for these cases. The patient had cirrhotic changes grossly at the operation and a more stormy convalescence than did the other 2 patients. Two large accessory spleens were removed along with the regular spleen at the operation, and though the patient is still showing evidence of hepatic damage she has been free from the blood symptoms and her blood count has remained normal.

A second patient improved significantly after the operation and was well for two years, at the end of which time he came back to the hospital because of lymphadenopathy of the neck. A biopsy showed benign hyperplasia of the lymph gland, which probably resulted from the compensatory process following removal of the spleen. The lymph glands are often enlarged following splenectomy to compensate for the loss of lymphoid tissue present normally in the spleen.

The third patient in this series made an uneventful recovery and has been well for two years.

I had 1 patient with a syndrome which was most likely early splenic anemia without any hepatic damage present. This patient improved considerably from a hematologic point of view following the operation but died on the fourth day after the operation from aspiration pneumonia.

At the Cook County Hospital in the hematology service 3 patients have submitted to splenectomy during the past four months. A man aged 22 entered the hospital with severe anemia of undetermined origin and bone marrow which on several examinations showed hypoplasia. This patient failed to improve with frequent large transfusions and all other forms of medical therapy. Although the blood picture was somewhat compatible with aplastic anemia, the prolonged bleeding time and the complete absence of platelets, as well as the progressively fatal course of the disease in spite of intense therapy with transfusions, led us to decide on splenectomy. A bone marrow puncture immediately preceding the operation, after many transfusions, showed in contrast to two previous marrow punctures an increased number of cells which appeared to be lymphoid in nature but which might well have been small myeloblasts. This may have been an indication of extreme effort on the part of the bone marrow to compensate for the aplasia. Removal of the spleen was followed by immediate recovery with an increase in the number of platelets and red blood cells and in the hemoglobin value. The patient six months after the operation is well and shows a normal picture hematologically.

The second patient, a girl aged 18 years, had always been in good health until one month before she entered the hospital with a hemoglobin content of 20 per cent and a red blood cell count of 1,290,000. Platelets were normal and no abnormal cells were noted in the differential. Many nucleated red cells were present in the peripheral circulation, and the reticulocyte count was increased to 15 per cent. The icteric index was 12. The fragility test showed hemolysis beginning at 0.5 per cent sodium chloride. Urine showed increased urobilinogen. All the findings were compatible with congenital hemolytic anemia excepting the lack of spherocytes. Splenectomy was performed and was followed by an uneventful recovery after a stormy convalescence from a postoperative pneumonia. The patient has made a complete recovery hematologically and at the present time is well.

The third patient, a woman aged 46, with a history of profuse menstrual bleeding for many years, entered the hospital with severe bleeding and severe anemia. A diagnosis of idiopathic purpura hemorrhagica was made. The patient's spleen was removed. There has been complete recovery following the splenectomy.

The results thus show that 3 of 13 of our patients, or 23.1 per cent, died following splenectomy. In searching for the cause of death one should consider the following factors: Did we make the proper diagnosis in our cases? In the 2 that came to autopsy, the preoperative diagnoses were confirmed, and the causes of death were found to be aspiration pneumonia in 1 and postoperative hemorrhage and shock in the other. Permission for autopsy on the third patient was not obtained, but the similarity of the clinical picture during the relapse preceding death to the one prior to the operation makes me feel that the recurrence may have been due to the presence and hyperplasia of the accessory spleen which was seen at operation and, owing to the condition of the patient at the time, could not be removed. Possibly a second operation should have been performed during the time of improvement following the first operation.

CONCLUSIONS

1. Splenectomy at the present time is indicated in three medical conditions: (*a*) congenital hemolytic jaundice, (*b*) idiopathic purpura hemorrhagica and (*c*) early stages of splenic anemia.

2. It should be realized that splenectomy is still being done on an empirical basis and not on any pathologic or physiologic basis. Since it has been shown that only patients afflicted with these three diseases are the ones who improve with splenectomy, great care must be given to the proper diagnosis.

3. Conservative medical treatment should first be tried on all patients and splenectomy resorted to only after all efforts have failed to induce a state of remission by medical means. Many lives will be saved by having a splenectomy done during a state of relapse, when all efforts to induce a remission have failed and the patient's condition appears to be in the terminal stage.

4. If splenectomy is decided on, the following considerations are of the greatest importance:

(*a*) The fact should be recognized that splenectomy is still, even in the hands of expert surgeons, a serious operation. The high vascularity of the organ and the tendency to hemorrhage, accompanied by the debilitated condition of the patient as a result of the anemia, require not only accuracy but also speed in the surgical management of these patients.

(*b*) Careful preoperative and postoperative care are very essential. Transfusions are given freely before operation as well as during the operation if necessary. All details of careful treatment before and after surgery are heeded.

(*c*) A careful search should be made for accessory spleens during the operation, and if the condition of the patient does not permit their removal at this time they should be removed when the clinical condition of the

patient permits. One of our patients I feel certain died as a result of hyperplasia of the accessory spleen noted during the operation but not removed. Unfortunately permission for autopsy to confirm this belief was not obtained. If these accessory spleens are looked for, they will be found more frequently.

(*d*) It should also be borne in mind that removal of the spleen is accompanied by hyperplasia of the lymphoid and reticulo-endothelial tissue elsewhere in the body to compensate for the splenic loss. It is therefore not uncommon to have patients return after a splenectomy with hyperplasia of the lymph nodes which is due to a compensatory reaction.

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STAPHYLOCOCCUS AUREUS PNEUMONIA

WITH SPECIAL REFERENCE TO ITS OCCURRENCE AS A COMPLICATION OF INFLUENZA

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Primary staphylococcic pneumonia has been adequately described as a clinical entity. Chickering and Park [1] reported 155 cases of Staphylococcus aureus pneumonia occurring during the influenza epidemic of 1918. At this time there were 8,100 patients with influenza at Camp Jackson, S. C., approximately 1,400 of whom later developed inflammatory changes in the lungs. The picture, as described, was one of overwhelming sepsis, the temperatures ranging from 104 to 106 F. with frequent remissions. A peculiar "cherry red indigo blue cyanosis" was a regular accompaniment of the picture. Physical signs were diffuse and surprisingly sparse in view of the extensive consolidation on roentgenographic examination. The sputum was described as being friable, purulent and of a dirty salmon pink color resembling anchovy sauce or the "contents of an overripe furuncle"; on culture this yielded Staphylococcus aureus as the predominating organism. Because of technical difficulties, few blood cultures were taken, and two were positive for Staphylococcus aureus. Many patients showed a leukopenia, but the majority had a normal white count. Many of those with leukocytosis had complications such as empyema or pericarditis. Of the 155 only 2 recovered; 12 died between the first and the fifth day and 73 between the sixth and the tenth day. Pathologically the lungs were not as voluminous as in those cases in which death was due to streptococcic pneumonia; usually the dependent parts were involved. The pleural surfaces showed many petechiae. On section, areas did not stand out as in bronchopneumonia following measles. There were innumerable small abscesses from 1 to 10 mm. in size. Rapid coalescence of the abscesses occurred in some patients, and there was an attempt at limitation by the formation of connective tissue. Of interest was the low incidence of empyema, 3 cases occurring in their series.

More recently, Reimann [2] reported 6 sporadic cases of Staphylococcus aureus pneumonia, in 4 of which recovery occurred. One of his patients had preexisting asthmatic bronchitis, 2 contracted the disease during an influenza-like epidemic, 1 had had a sore throat, 1 was a pregnant woman with chronic glomerular nephritis and uremia, and the last was a 3 month old infant who presented a feeding problem. In these cases also fever was remittent, cyanosis well defined and bacteremia seldom noted. Abscesses developed in those who lived long enough; in 1 on the fifth day; in another, small miliary abscesses developed twenty days after onset; in still another, typical chronic lung abscesses developed with foul sputum. Cohen [3] has called attention to the disease as it occurs in children and stresses its predilection for infants.

My associates and I observed 5 cases of Staphylococcus aureus pneumonia. These occurred at the time of a brief epidemic of acute respiratory disease, during which influenza A [4] virus was isolated from a fatal case and from 1 of our cases of influenza uncomplicated by pulmonary changes.[5] At this time a larger number of cases of staphylococcic pneumonia were observed at another clinic in this city.[6] These cases are of interest because (*a*) we have evidence that influenza virus infection preceded their pneumonia and (*b*) we feel that chemotherapy had a definite effect on the course of the disease.

From Sept. 1, 1939 through March 31, 1940 there were 60 cases of pneumococcic lobar pneumonia, 1 case of pneumonia due to a pneumococcus which could not be typed, and 1 case of Staphylococcus aureus empyema and pneumonia in this hospital. During a comparable period in 1940 to 1941 there were 53 cases of typed pneumococcic pneumonia, 2 cases of "atypical pneumonia," 12 cases of pneumonia for which a definite cause could not be established and 5 cases of Staphylococcus aureus pneumonia. All of the latter cases occurred during a period of three months immediately following the influenza epidemic.

CASES IN WHICH INFLUENZA VIRUS INFECTION WAS PROVED

CASE 1.—N. B., a youth aged 19 years, entered the medical service on Jan. 18, 1941. He was well until one week preceding entry, at which time he had malaise, generalized aches and slight headache. Five nights before entry a shaking chill occurred. Following this a sharp pain developed in the right lateral chest region on deep breathing. For the next four days he was given sulfapyridine, 1 Gm. every four hours, without any appreciable effect. His physician interpreted the chest signs as being due to fluid and consolidation.

Physical examination on entry showed him to be acutely ill, breathing rapidly, with a dusky cyanosis about his lips. The chest showed a moderate scoliosis of the thoracic spine with convexity toward the left. There were signs of consolidation and fluid over the right lower lobe. The significant laboratory findings and the clinical course are shown in chart 1.

On the first day he had a shaking chill with a temperature rise to 105.4 F. He produced no sputum the first day; a throat swab grew rough pneumococci. A chest film on the second day revealed fluid in the right chest, with the lung beneath it coarsely mottled. Two attempts at thoracentesis in the right axilla were unsuccessful. A lung puncture on the third hospital day revealed predominantly coagulase positive Staphylococcus aureus with no pneumococci. Blood cultures remained sterile. On the fourth hospital day a diffuse scarlatini-

Dr. Charles A. Janeway gave many valuable suggestions.
From the Medical Clinic of the Peter Bent Brigham Hospital, Boston.

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form rash developed over the abdomen. On the fifth hospital day, thoracentesis in the right midaxillary line yielded 50 cc. of thin yellowish material with a specific gravity of 1.020 and containing 22,000 white cells, most of which were polymorphonuclears. On culture, it contained many nonhemolytic coagulase positive Staphylococcus aureus organisms. Another chest tap on the following day yielded 150 cc. of thicker fluid with similar characteristics. Repeated taps thereafter failed to yield fluid, in spite of roentgenologic demonstration of it. A film of the chest on the eighth hospital day showed slight clearing of both fluid and consolidation, but the patient continued to appear gravely ill, and clyses of saline solution were necessary to maintain fluid balance. Beginning with the third hospital day he began to raise very tenacious thick mucoid sputum containing much bright red blood. The rash had disappeared, only to recur on the tenth hospital day. By the twelfth day it had involved both arms and legs and was associated with enlargement of axillary, cervical, preauricular and epitrochlear nodes. The spleen was not felt. The presence of the rash and lymphadenopathy suggested a drug reaction, and the lack of any improvement seemed to justify discontinuing the drug. Following the discontinuance of the drug, the patient's improvement was striking. His appetite returned after an abrupt fall in temperature. Chest films had by this time begun to show clearing of both fluid and consolidation. He was allowed up on his nineteenth hospital day and discharged on the thirty-fourth hospital day. When last seen, three months after the onset of his illness, he was asymptomatic. On physical examination his chest was clear.

The course of this patient was confused by the development of drug fever. The rash was at first thought to be caused by the staphylococcic infection, for this has been reported.[7] However, this seemed unlikely, because the administration of 2 Gm. of sulfathiazole during convalescence caused an immediate rise in temperature to 102.4 F., malaise, headache and an identical scarlatiniform rash. All quickly subsided.

CASE 2 (chart 2).—M. K., a woman aged 35, a housewife, entered the hospital on Jan. 20, 1941. She had been well until six days before entry, when she suffered generalized malaise with a temperature of 101 F. She continued to feel miserable and to have a fever. This necessitated bed rest. On the day before entry she began to cough, with the production of large amounts of dark brown sputum. This was associated with a

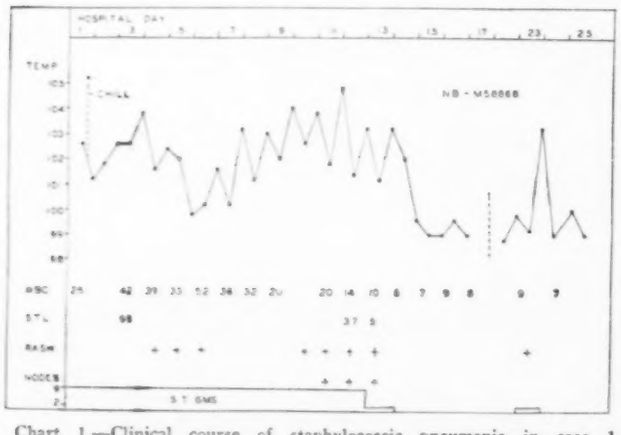

Chart 1.—Clinical course of staphylococcic pneumonia in case 1. WBC, white blood count in thousands; STL, blood sulfathiazole level in milligrams per hundred cubic centimeters; S.T. GMS., sulfathiazole dosage in grams per day. All temperatures are rectal.

rise in temperature to 103 F. and soreness in the right chest. Dyspnea was prominent. At this time she was started on sulfathiazole, 1 Gm. every four hours, by her physician.

Physical examination on entry showed her to be acutely ill and dyspneic. No noticeable cyanosis was present. There was a healing herpetic lesion on the upper lip. Findings in the chest consisted of dulness, bronchial breathing, increased tactile fremitus and increased whispered voice over the right lower lobe up to the angle of the scapula; a similar smaller area was present over the left base. The administration of sulfathiazole was begun. The sputum was mucopurulent and, as it later became more abundant, assumed a peculiar light

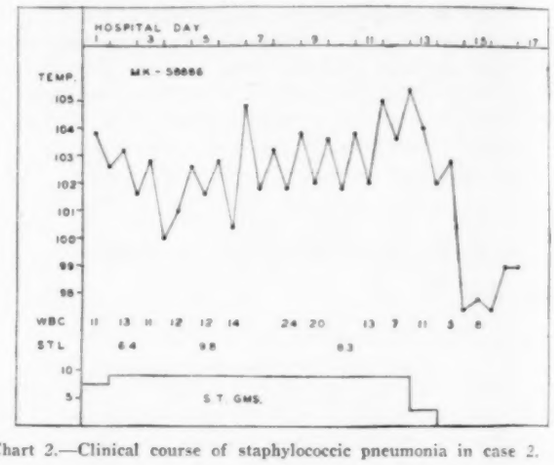

Chart 2.—Clinical course of staphylococcic pneumonia in case 2.

chocolate colored tint with occasional streaks of bright red blood. No pneumococci were found in sputum specimens obtained on the first and second hospital days. However, the samples gave an abundant growth of coagulase positive Staphylococcus aureus. By the third hospital day, signs of consolidation of the left lower lobe were more extensive, and a chest film at this time showed practically complete consolidation of the middle and lower lobes on the right, and of the lower lobe on the left. The patient looked more toxic, became progressively weaker and dyspneic, and her condition appeared quite grave. On the fifth hospital day she began to raise bright red blood in her sputum. On the eighth hospital day roentgenograms showed an increase in the consolidation, with a spread into the right upper lobe. On the thirteenth hospital day, because of lack of improvement and because of the result obtained in case 1, sulfathiazole was discontinued. Improvement was dramatic. Her temperature fell abruptly to normal, and she became stronger and thereafter remained afebrile. The day before the drug was stopped it was observed that the signs were clearing. On the fifteenth hospital day a roentgenogram of the chest showed considerable clearing on both sides. Improvement continued, and the patient was discharged on her twenty-third hospital day. When last seen, three months after the onset, she was well, and a roentgenogram of the chest was clear.

CASE 3 (chart 3).—I. Be., a woman aged 58, a housewife, was admitted to the hospital on Jan. 10, 1941. She was known to have hypertension and mild diabetes which did not require insulin. Four days before entry she contracted a cold and a cough and a temperature of 101 F. She complained of weakness and malaise, both of which, however, were usual for her. On the day of admission she felt much worse and complained of pain in the right lateral chest region.

On examination the patient appeared mildly dyspneic. She coughed intermittently and complained of pain in the right anterior chest region on deep breathing. Examination of the lungs showed slight dulness at the right base. Chest films at this time showed consolidation in the base of the right upper lobe laterally, with bronchopneumonic consolidation in both bases, more on the right. Sputum on entry showed Streptococcus viridans and no pneumococci. Lung puncture on the second hospital day revealed hemolytic Staphylococcus aureus, coagulase negative. Blood cultures remained sterile. Sulfathiazole was started, but her clinical course was steadily downhill. Her diabetes was accentuated, and up to 60 units daily of regular insulin was required. A roentgenogram on the seventh hospital day showed considerable bronchopneumonia in the right lung

7. Stevens, F. A.: Occurrence of Staphylococcus Aureus Infection with Scarlatiniform Rash, J. A. M. A. **88**: 1957-1958 (June 18) 1927.

and a few mottled areas in the left. A third examination on the fourteenth hospital day showed no essential change. No fluid developed. Signs remained the same, and the patient died on the seventeenth hospital day. Permission for autopsy was refused.

CASES IN WHICH INFLUENZA VIRUS INFECTION WAS SUSPECTED BUT NO PROOF WAS ATTEMPTED

CASE 4.—I. Bo., a white woman aged 58, a housewife, entered the hospital on Dec. 29, 1940 in coma. She had been well until three days before entry, at which time she felt "grippy" and developed nausea and malaise. The temperature at this time was 102.4 F. and her throat was mildly injected. The following day her chest was clear and her temperature 100 F. Her physician saw her at 10 a. m. on the day of admission. He stated that at that time she looked "toxic" but that he wasn't particularly worried about her condition. To him she did not appear any different from his many other patients with influenza. Because of a few rales at the left base, he began to administer sulfapyridine. At noon she suddenly became comatose and remained in that state, arriving at the hospital at 4:35 p. m.

Physical examination showed her to be well developed and nourished, comatose and in collapse. The temperature was 105 F. (rectal), the pulse rate 160 and the respiratory rate 35. The extremities were cold and extremely cyanotic, with a mottled appearance. The neck was not stiff. The ear drums were normal and the pharynx was not injected. The lungs were resonant throughout with a few fine crepitant rales low in the right axilla. The abdomen was moderately distended. The only pulses obtainable were in the carotid and femoral regions. A lumbar puncture showed normal pressure and no abnormalities in the fluid. The red blood count was 5.69 million per cubic millimeter; hemoglobin, 13.8 Gm. per hundred cubic centimeters and the sedimentation rate 18 mm. per hour. The white blood count was 9,500 per cubic millimeter, with 79 per cent juvenile neutrophils, 18 per cent lymphocytes and 3 per cent monocytes. A blood culture was sterile. The patient was given caffeine with sodium benzoate, and a 10 per cent

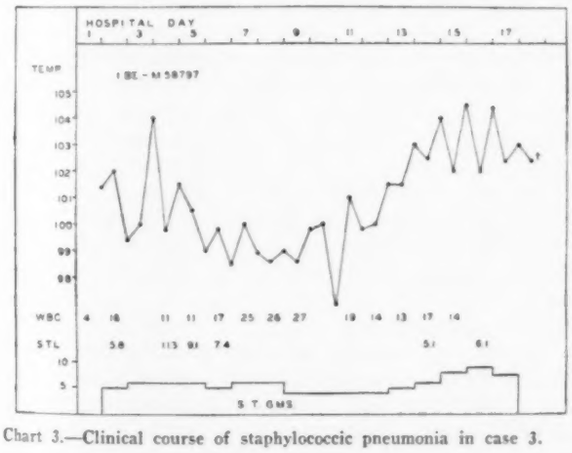

Chart 3.—Clinical course of staphylococcic pneumonia in case 3.

dextrose in saline infusion in the femoral vein. She died at 5:55 p. m., one hour and twenty minutes after admission. The clinical impression was either overwhelming sepsis or influenzal pneumonia.

At autopsy the principal findings were in the lungs. The right lung weighed 520 Gm. and the left 360 Gm. The pleural surfaces showed multiple petechial hemorrhages, many of them coalescing. On longitudinal section the lungs showed a patchy hemorrhagic bronchopneumonia, confluent particularly in the lower lobes of both lungs. The parenchyma immediately surrounding the small bronchioles were hemorrhagic and intensely congested. Consolidation was not a prominent feature, and crepitation was present. The bronchi were intensely congested and hemorrhagic.

On microscopic examination, the marginal alveoli showed a considerable degree of edema, present also in the deeper areas of the lung substance. Beneath the marginal zone were areas where the alveoli contained an exudate of polymorphonuclears, some large monocytes showing phagocytosis of cocci, and red cells in varying amounts. Areas of typical pneumonia, which in some places tended to be confluent, in others patchy, showed a distinct relationship to the bronchi. The septums were considerably congested, not only in pneumonic areas, but also in areas of emphysema and atelectasis where no pneumonic process was present. In some places the polymorphonuclears infiltrated the septums. Asphyxial hyaline membrane formation was seen in some instances, but not very frequently. The bronchi showed desquamation of epithelium, with collections of débris, polymorphonuclears and monocytes in the lumen. A polymorphonuclear leukocytic infiltration occurred in the stroma of the wall. Fibrinous thrombi were present in some of the large vessels.

A postmortem blood culture was sterile. A lung culture yielded Staphylococcus aureus and Hemophilus influenzae (a rough respiratory strain, not typable).

CASE 5.—W. S., a youth aged 18 years, entered the hospital on March 19, 1941 because of fever of four days' duration. At the onset he felt chilly and was found to have a temperature of 102 F. There was no pain and only slight cough. Two days before entry his temperature was 105 F.

On physical examination the patient did not appear acutely ill. The throat was clear. The lungs were resonant throughout, with numerous coarse moist rales anteriorly and posteriorly. The white blood count on admission was 3,500 per cubic millimeter, with 75 per cent polymorphonuclears, 21 per cent lymphocytes and 4 per cent monocytes. A sputum culture yielded predominantly hemolytic coagulase positive Staphylococcus aureus, but a type III pneumococcus was grown from the heart's blood of the mouse in forty-eight hours (streptococci and staphylococci were in its peritoneum). Two blood cultures were sterile. Sputum culture on March 31 again yielded predominantly hemolytic Staphylococcus aureus. A film of the chest on the second hospital day revealed coarse mottling through the lower two thirds of the left lung. Temperatures went as high as 104 F. on the second hospital day, at which time sulfathiazole was exhibited, 7 Gm. a day. By the third hospital day the temperature was 102 F. and by the fourth day 99 F. The sulfathiazole dosage was decreased to 3 Gm. for two days and then omitted on the sixth hospital day, at which time the temperature was normal. The white blood count ranged from 2,700 to 3,700 per cubic millimeter. The patient had an uneventful convalescence and was discharged on the tenth hospital day.

SEROLOGIC STUDIES

Repeated serologic studies have shown the significance of rises in the titer of neutralizing antibodies for influenza virus in patients with proved influenzal infections. Neutralizing antibodies increase rapidly after the fifth day of disease and reach a maximum ten to fourteen days after the onset. In an average of four separate epidemics, Horsfall, Hahn and Rickard [8] found the following titers:

Acute—mean 1:26, lowest 0, highest 1:360.
Convalescence—mean 1:209, lowest 1:6, highest 1:1,444.

The average increase in titer during convalescence was twenty-six times, and any rise exceeding the value for the acute serums by four times was considered significant. Two months after the acute episode the titer of antibodies had fallen but was still five times that during the acute stage. Three months after the acute episode the titer was twice as great, and from eight to twelve months after was 1.5 to 1.3 times as great.[4] Similar figures have been presented by Francis, Magill and

8. Horsfall, F., Jr.; Hahn, R. G., and Rickard, E. R.: Four Recent Influenza Epidemics: An Experimental Study, J. Clin. Investigation **19**: 379-392 (March) 1940.

Rickard.[9] In their studies the titers were slightly lower in those patients from whom no virus was obtained.

In eighty-three noninfluenzal respiratory infections, occurring at the time of the influenza epidemic, studies were carried out by Horsfall, Hahn and Rickard.[8] Of 56 patients with common colds, only 1 patient had an increase in neutralizing antibodies, and he had contact with influenza. In 19 sporadic cases of grip, 5 cases of atypical pneumonia and 4 cases of pneumococcic pneumonia, no rise in titer was noted. These findings are in agreement with those of other workers.[10] In order to determine whether the cases of staphylococcic pneumonia were secondary to influenza, serums taken at different stages of the disease were studied for the presence of neutralizing antibodies for influenza virus.

METHODS

Protection tests against influenza A virus were carried out according to the method described by Francis, Magill and Rickard.[9]

(*a*) Virus:[11] A fresh suspension of mouse lung infected with PR8[12] strain four days previously was used and diluted in broth so as to give 100 or 1,000 minimum lethal doses in the final infecting mixture.

Results of Protection Tests

Patient	Date	Days After Onset	Titer
N. B. (case 1)	1/30/41	19	640
	4/11/41	90	226
M. K. (case 2)	1/20/41	6	0
	1/30/41	16	640
	4/15/41	91	108
I. Be. (case 3)	1/10/41	4	0
	1/25/41	19	142

Figures are in final serum dilutions protecting against 100 minimum lethal doses of virus (N. B., M. K.) or 1,000 minimal lethal doses (I. Be.).

(*b*) Serums from patients obtained on admission and during various stages of convalescence were stored at 5 C. until tests were run.

(*c*) White Swiss mice, 3 to 4 weeks old, were used for titration. Serums were diluted serially in physiologic solution of sodium chloride 1:5, 1:10, 1:20, 1:40, 1:80 and 1:160. To 0.3 cc. of each dilution was added 0.3 cc. of the virus suspension so calculated that the infecting dose would contain either 100 minimum lethal doses (M. K., N. B.) or 1,000 minimum lethal doses (I. Be.). The serum-virus mixtures were kept at 37 C. for one-half hour, following which 0.05 cc. of each mixture was inoculated intranasally into each of three lightly etherized mice. The time of death was noted, and at the end of ten days all survivors were killed. All mice were examined post mortem to determine the nature and extent of pulmonary lesions. The protective titer of the serum was calculated from that dilution of serum which protected 50 per cent of the mice against death,[13] figures being on the basis of final serum dilution in the serum-virus mixture. If complete protection was given in the highest dilution, the next figure was taken as the end point.

RESULTS OF NEUTRALIZATION TESTS

The results obtained in the neutralization tests are shown in the table. The complete protection afforded by the first serum of N. B. with a lower titer three months later is adequate proof of influenzal infection, in spite of the fact that no acute serum was titrated. Although titrations in 2 of our cases represent protection against 100 minimum lethal doses, as compared with previously given figures against 1,000 minimum lethal doses, the relative rise in antibody titer is significant and proves that these patients had just had influenza A infection.

RELATIONSHIP OF STAPHYLOCOCCUS AUREUS PNEUMONIA TO INFLUENZA

The close association of Staphylococcus aureus pneumonia and influenza has long been appreciated. Fraenkel[14] in 1904 described the clinical course of an infection as influenzal pneumonia in which Staphylococcus aureus produced a rapidly fatal pulmonary disease. The large number of cases occurring during the 1918 epidemic as described by Chickering and Park[1] is significant. These authors suggested that whatever was the cause of epidemic influenza it depressed the hemopoietic system to such a degree that organisms normally present in the throat could gain a foothold in the lungs. It would seem that this leukopenia combined with the known destructive effect of the influenza virus[15] on bronchial epithelium would allow invaders to gain a foothold in the lungs. Jordan[16] notes that various observers were impressed with the lack of correlation between clinical influenza and typical lobar pneumonia during the epidemic of influenza in 1918.

Various bacteriologic studies have confirmed the more than incidental relationship between influenza and Staphylococcus aureus. Patrick[17] was struck by the high incidence of Staphylococcus aureus in the postmortem lung cultures from patients with influenza in the Malta command in 1918. The organism was found in 84 per cent of the 30 cases that came to necropsy. In a similar series of postmortem examinations, Habbe[18] found pure cultures of Staphylococcus aureus in 1.5 per cent, pneumococcus and Staphylococcus aureus in 2.2 per cent of the lungs in 131 lobar pneumonia cases. However, in 20 cases of "grip pneumonia" he obtained pure cultures of Staphylococcus aureus in 40 per cent. Staphylococcus aureus was found in 2 out of 20 cases of whooping cough pneumonia, and this organism was not found in any of 6 cases of pneumonia following measles.

Burgess and Gormley[19] reported 3 cases of rapidly fatal pneumonia during the influenza epidemic in January 1929. These cases in many respects resembled those of Chickering and Park,[1] all proving fatal within forty-eight hours. Leukopenia was striking, and pulmonary consolidation well defined. Staphylococcus aureus was recovered from the sputum in all 3 and from the lungs in the case in which autopsy was performed, which showed hemorrhagic bronchopneumonia.

9. Francis, T., Jr.; Magill, T. P., and Rickard, E. R.: Epidemiological and Serological Studies in Epidemic Influenza, Am. J. Pub. Health **27**: 1141-1160 (Nov.) 1937.
10. Francis, T., Jr., and Magill, T. P.: Immunological Studies with the Virus of Influenza, J. Exper. Med. **62**: 505-516 (Oct.) 1935.
11. Drs. J. F. Enders and H. E. Pearson provided the standardized virus suspensions.
12. Francis, T., Jr.: Transmission of Influenza by a Filtrable Virus, Science **80**: 457-459 (Nov. 16) 1934.
13. Reed, L. J., and Muench, H.: A Simple Method for Estimating Fifty Per Cent End Points, Am. J. Hyg. **27**: 493-497 (May) 1938.
14. Fraenkel, A. Spezielle Pathologic und Therapie der Lungenkrankheiten, Berlin, Urban & Schwarzenberg, 1904.
15. Wolbach, S. B., and Frothingham, Channing: Influenza Epidemic at Camp Devens in 1918: Pathology of Fatal Cases, Arch. Int. Med. **32**: 571-600 (Oct.) 1923.
16. Jordan, E. O.: Epidemic Influenza, Chicago, American Medical Association, 1927.
17. Patrick, A.: Report of Bacteriological Examinations in Cases of Influenza, Malta Command, 1918, J. Roy. Army M. Corps **40**: 133-138, 1923.
18. Habbe, K.: Zur Bakteriologie bei Lungentzünungen des Menschen, Deutsche med. Wchnschr. **55**: 1506-1508 (Sept. 6) 1929.
19. Burgess, A. M., and Gormley, C. F.: Pneumonia in Relation to an Epidemic of "Mild" Influenza, with Report of Three Fulminating Cases Apparently Due to Staphylococcus Aureus, New England J. Med. **202**: 261-264 (Feb. 6) 1930.

A comparable case was reported by Stokes and Wolman,[20] who obtained both the influenza A virus and Staphylococcus aureus from the lungs at autopsy. The patient was a nurse, aged 20, who had a furuncle three weeks prior to entry, which healed uneventfully. The night before entry she felt chilly. The day of admission her temperature was 101 F. and soon rose to 104.4. A chest film was negative. She became prostrated and died within forty-eight hours. At postmortem examination the lungs were edematous and dark red. There was capillary dilatation, edema fluid in the alveoli, and many gram positive cocci without leukocytes. The bronchioles and trachea were denuded of epithelium. Staphylococcus aureus was obtained from an antemortem blood culture and from the lungs at autopsy. By means of ferret passage, they were able to isolate an influenza virus which was neutralized by rabbit serum immune to the PR8 strain. Scadding [20a] was able to isolate influenza A virus and Staphylococcus aureus from the lungs in a rapidly fatal case similar to that of Stokes. Andrewes, Laidlaw and Smith [21] were unsuccessful in attempts to isolate the virus from the lungs in a case of influenzal pneumonia occurring during a proved influenza epidemic. However, antemortem thrombi of clumps of cocci were found in the pulmonary vessels. From them an almost pure culture of Staphylococcus aureus was obtained.

Troisier, Bariety and Brocard [22] reported a case similar to our first case. In their case malaise preceded the rather acute onset by two days. They raised the question whether or not these cases represented a complication of grip. Thus it is seen from this brief review that the more than incidental relationship between primary Staphylococcus aureus pneumonia and influenza has impressed other workers. However, only in the case of Stokes [20] and that of Scadding [20a] was influenza definitely proved until this year.[23]

The demonstration of either a very high titer or of a decided increase in protective antibodies against influenza virus in patients is prima facie evidence of influenzal infection. The evidence for this has been presented earlier. Therefore it appears certain that in our patients N. B., M. K. and I. Be., there is definite evidence from the antibody titers that influenza A infection immediately preceded the pneumonia.

Unfortunately, no attempt was made to isolate the virus from the lungs in the fatal case herein reported. However, clinically the case and autopsy findings were similar to those reported in the 1918 epidemic,[1] to those of Burgess and Gormley,[19] to the case of Stokes and Wolman,[20] and to the cases reported by Finland, Strauss and Peterson.[6] McCordock and Muckenfuss [24] were able to produce a lobular pneumonia in a small number of rabbits and death within twenty-four to forty-eight hours in a larger number by combining vaccinia virus and Staphylococcus aureus for intranasal injection. Staphylococcus aureus alone produced insignificant lesions, and virus alone produced a nonfatal disease characterized by either a hemorrhagic consolidation or an interstitial bronchopneumonia. The lesions of the hemorrhagic type were similar to those seen in patients dying within a few days after the onset of influenza. The virus produced such changes in the lungs that bacteria, which in normal animals incited only limited lesions, were enabled to multiply and spread, causing extensive and fatal lesions. That this is not the only respiratory virus infection which can cause secondary invasion by Staphylococcus aureus is indicated by 2 of the cases of "bronchopneumonia, variety X," reported by Longcope,[25] from which hemolytic Staphylococcus aureus was obtained from the sputum. Although no definite virus etiology was demonstrated in his cases, viruses have been demonstrated in similar cases of atypical pneumonia.[26] In 1 of the fatal cases of pneumonia from which a virus resembling the meningopneumonitis virus was isolated, staphylococci were cultured from the lungs at postmortem examination.

ROLE OF CHEMOTHERAPY IN STAPHYLOCOCCUS AUREUS PNEUMONIA

In view of the use of chemotherapy in these cases, some comment is pertinent. It appears that there is a group of these pneumonias much more fulminating than others. Chickering and Park [1] had many such cases. Those reported by Burgess and Gormley [19] and by Stokes and Wolman [20] similarly are of the same type. Into such a division would fall our fourth patient, I. Bo. From the fulminating nature of these it would appear that chemotherapy might have little to offer, unless perhaps given prophylactically during influenzal epidemics. However, in the other less severe forms I feel that chemotherapy with the sulfonamide derivatives has a definite place. Exactly how long the infection would have lasted in our cases in which recovery occurred is difficult to say in view of the continued elevation due to drug fever. Reimann [2] states that in favorable cases after three or four weeks the temperature gradually becomes lower and trails off. The case reported by the French workers was similar in many respects to our case which was complicated by empyema.[22] Their patient was afebrile only after three months. Pleural drainage was productive of fluid only in the early days of the disease. In our case with empyema (case 1), fever lasted only two weeks and no surgical drainage was necessary. Finland [27] reports that of 29 patients with staphylococcic pneumonia treated with sulfadiazine 6 died, 3 of whom had the fulminating type with death in forty-eight hours. Although our figures for recovery are not particularly gratifying and the series is not large, it does seem that chemotherapy definitely shortened the course of the illness in the 3 cases in which recovery occurred.

SUMMARY

1. Staphylococcus aureus pneumonia is characterized by a septic temperature, cyanosis, fairly extensive pulmonary consolidation, thick, purulent blood-streaked sputum, high mortality, and a protracted course in nonfatal cases. Empyema or multiple pulmonary abscesses are the most frequent complications. Blood

20. Stokes, J., Jr., and Wolman, I. J.: Probable Synergism of Human Influenza Virus and Staphylococcus Aureus in a Rapidly Fatal Respiratory Infection, Internat. Clin. **1:** 115 (March) 1940.

20a. Scadding, J. G.: Lung Changes in Influenza, Quart. J. Med. **6:** 425-464 (Oct.) 1937.

21. Andrewes, C. H.; Laidlaw, P. P., and Smith, W.: Influenza: Observations on the Recovery of Virus from Man and on the Antibody Content of Human Sera, Brit. J. Exper. Path. **16:** 566-582 (Dec.) 1935.

22. Troisier, J.; Bariety, M., and Brocard, H.: La staphylococcie pleuro-pulmonaire primitive, Ann. de méd. **39:** 189-210 (Feb.) 1936.

23. In the 1941 epidemic in Boston influenza A virus presumably was isolated from the lungs in a fatal case of staphylococcus pneumonia as reported by Pearson, Eppinger, Dingle and Enders.[5]

24. McCordock, H. A., and Muckenfuss, R. S.: The Similarity of Virus Pneumonias in Animals to Epidemic Influenza and Interstitial Bronchopneumonia in Man, Am. J. Path. **9:** 221-251 (March) 1933.

25. Longcope, W. T.: Bronchopneumonia of Unknown Etiology (Variety X), Bull. Johns Hopkins Hosp. **67:** 268-305, (Oct.) 1940.

26. Eaton, M. D.; Beck, M. D., and Pearson, H. E.: A Virus from Cases of Atypical Pneumonia: Relation to the Viruses of Meningopneumonitis and Psittacosis, J. Exper. Med. **73:** 641-654 (May) 1941. Weir, J. M., and Horsfall, F. L., Jr.: Recovery from Patients with Acute Pneumonitis of a Virus Causing Pneumonia in the Mongoose, J. Exper. Med. **72:** 595-610 (Nov.) 1940.

27. Finland, Maxwell; Strauss, Elias, and Peterson, O. L.: Sulfadiazine: Therapeutic Evaluation and Toxic Effects On Four Hundred and Forty-Six Patients, J. A. M. A. **116:** 2641-2647 (June 14) 1941.

culture may be negative, but culture of the sputum yields a heavy growth of Staphylococcus aureus. The largest reported epidemic occurred during the 1918 influenza pandemic, and influenza virus has been isolated from the lungs in 2 fatal cases and presumably from another in recent years.

2. Five cases of Staphylococcus aureus pneumonia were observed during a proved influenza A epidemic, and in the 3 cases in which serum was obtained, neutralization tests in mice proved that influenza A infection had immediately preceded the pneumonia. One of these patients died of overwhelming infection soon after admission; the other 4 were treated with sulfathiazole. One of the sulfathiazole treated patients died on the nineteenth hospital day. The other 3 patients made good recoveries, including 1 patient in whom empyema cleared with aspiration during the course of treatment with sulfathiazole.

4. It is concluded from this that Staphylococcus aureus pneumonia often occurs as a complication of influenza, and that sulfathiazole or sulfadiazine is indicated in its treatment.

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ATLAS-AXIS DISLOCATION FOLLOWING CERVICAL INFECTION

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Dislocation of the axis on the atlas is often traumatic (frequently with fracture of the odontoid process and resultant damage to the cord), but it may also occur as a sequel to cervical infections. This second cause brings the patient into the field of the otorhinolaryngologist, who deals with infections in this region and who must recognize the source of the dislocation.

ANATOMY

To understand the mechanics of this dislocation one must know the anatomy of the articulations and ligaments.[1]

There are three articulations: the lateral ones are arthrodial diarthroses because of the flattened articulating surfaces; the third, a rotary diarthrosis, median in position, lies between the smooth anterior surface of the odontoid process and the articular facet on the posterior aspect of the anterior arch of the atlas. A synovial membrane lines each of the three joints and, in addition, there is a synovial sac between the odontoid process and the transverse ligament.

The ligaments, of course, maintain the integrity of the joints. Each joint has an articular capsule. The strong point of the lateral articulations is a distinct band, the accessory ligament, situated in the vertebral canal and passing down medially from the lateral mass of the atlas to the posterior aspect of the body of the axis.

Next in importance are (1) the anterior atlo-axoid ligament (old term), which is a membranous structure, thin laterally and strong medially, extending from the anterior body of the atlas to the front of the body of the axis; (2) the posterior atlo-axoid ligament, which extends from the posterior arch of the atlas to the upper border of the vertebral arch of the axis, and (3) the transverse ligament of the atlas, which is a strong band attached laterally to the tubercles on the median aspects of the lateral masses of the atlas and running posterior to the neck of the odontoid process to hold it in place. There is a thin plate of fibrocartilage in its central portion.

PATHOLOGY

The best explanation of the pathologic changes which occur is that of Grieg,[2] who showed that cervical infections, by producing hyperemia, cause vertebral decalcification of a greater or less degree. The ligaments are so strong that they cannot be avulsed without tearing off fragments of bone with them, but if the bone has undergone previous decalcification the ligaments yield readily.

Jones [3] demonstrated this decalcification in some of his roentgen studies. He showed that it is peculiar to children at an age when the bones are imperfectly developed and not well calcified, that an inflammatory lesion anywhere in the upper cervical region may cause such decalcification, that the anterior arch of the atlas may show decalcification without destruction and, finally, that the onset of dislocation usually occurs about ten days after the infection begins.

Desfosses [4] and Grisel,[5] as quoted by Grieg,[2] believed that nasopharyngitis causes muscle spasm which produces the torticollis and vertebral subluxation. With this Grieg [2] disagreed, asserting that the spasm of the prevertebral and occipitovertebral muscles splints the bones and is therefore a result, not a cause.

These authorities then give the following sequence of events: (1) cervical infection with hyperemia, (2) vertebral decalcification and loosening of the ligamentous attachments, (3) slipping forward of one or both lateral articular facets of the atlas and locking as the facet slips forward and downward over the opposing facet of the axis or (4) slipping backward of one articular facet of the atlas (if both lateral facets slip to any degree death may supervene since, to permit this to happen the odontoid must have moved posteriorly and thus have crushed the cord). Berkheiser and Seidler [6] presented 2 such cases in a series of 5. But they overlooked the fact that in any three-point suspension two points must always move, otherwise a fracture occurs.

CLINICAL FINDINGS AND RELATION TO SURGERY

The patient holds his head rigidly, slightly in front of the normal plane, tilted toward one shoulder, with the face rotated toward the opposite shoulder. Tenderness over the lateral masses of the axis and atlas occurred in all 4 of our cases. There is no spasm of the sternomastoid muscle such as occurs in "spastic" torticollis, the rigidity resulting from spasm of the deep cervical muscles.

One may see an occasional case of torticollis preceding or following mastoidectomy and must be alert not to attribute it to an unconscious attempt on the part of the patient to relax an inflamed sternomastoid muscle on the diseased or operated side. Two of our patients whose dislocation was associated with mastoiditis, one occurring before operation and the other after opera-

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1. Cunningham, D. J.: Text-Book of Anatomy, edited by A. Robison, ed. 6, New York, William Wood & Company, 1931, p. 311.

2. Grieg, D. M.: The Surgical Pathology of Bone, London, Oliver & Boyd, 1931, p. 227.

3. Jones, R. W.: Dislocation of the Neck at the Atlanto-Axial Joint, Proc. Roy. Soc. Med. **25**: 586-590 (Feb.) 1932.

4. Desfosses, P.: Un cas de maladie de Grisel: Torticolis nasopharyngien par luxation de l'atlas, Presse méd. **38**: 1179 (Aug. 30) 1930.

5. Grisel, P.: Enucléation de l'atlas et torticolis nasopharyngien, Presse méd. **38**: 50 (Jan. 11) 1930.

6. Berkheiser, E. J., and Seidler, L. Ferdinand: Nontraumatic Dislocations of Atlanto-Axial Joint, J. A. M. A. **96**: 517 (Feb. 14) 1931.

tion, held the head tilted toward the sound side and the chin toward the diseased side. This position actually increased the strain on the inflamed muscle and caused me to consider the possibility that a cervical dislocation had in fact occurred.

It should be emphasized that care must be exercised in placing a patient for operation and in moving him postoperatively, particularly after severe or long-lasting cervical infections. In 1 case in our series (case 4) in which the dislocation was found after operation the position on the table may have been partly responsible for the dislocation by stretching of the ligamentous attachments, though the dislocation did not occur until twenty-four hours after the operation.

Two cases occurring after tonsillectomy have been reported. One following local anesthesia was reported by Swanberg.[7] This developed on the evening of the day of operation. There was no history of violence. Jones[8] reported a case gradual in onset two weeks after an adenotonsillectomy. It was probably a result of inflamed and hyperemic nasopharynx and pharynx.

The tilted, rotated and fixed head may give rise to the suspicion that a retropharyngeal abscess exists, as indeed it may, though not necessarily; in case 2 such a diagnosis was erroneously made. In making the differential diagnosis in such cases local examination will establish the presence of retropharyngeal abscess and roentgen studies will show the cervical dislocation.

No neurologic signs or symptoms were present in any of the 4 cases, so there was no compression of the cord.

TREATMENT

Reduction of the dislocation is accomplished by accentuating the deformity, in addition to traction, permitting unlocking of the lips of the lateral articular facets. Reposition of the vertebrae is secured by extension and by bringing the head to the midline while rotating the chin to its normal position. Fixation in plaster for a variable time allows healing and reattachment of the ligaments. In 1 case a paper collar support was used after removal of the plaster.

The results in all cases were good.

A series of 4 cases is presented briefly, each case having features which makes separate presentation desirable.

CASE 1.—*Retropharyngeal abscess with atlo-axoid dislocation.*

E. R., a boy aged 7 years, had had pain and swelling of the left side of the neck for six weeks, with a temperature ranging from normal to 103 F. He held his head flexed to the left with the chin rotated toward the left shoulder. Extension of the neck was greatly limited but forward flexion was normal. Rotation of the chin to the left was 75 per cent of normal but to the right only 10 per cent of normal. Contracture of the sternomastoid muscle was not present. Slight tenderness was found over the upper cervical vertebrae. There was a protrusion of the left pharynx posteriorly into the throat. This protrusion was opened and drained, but the asymmetry persisted.

Roentgenograms showed a forward dislocation of the atlas on the axis on the right, with forward dislocation of the atlas.

A cure was obtained by reposition of the vertebrae and traction.

CASE 2.—*Atlo-axoid dislocation with a diagnosis of retropharyngeal abscess which, however, was not present.*

P. L., a girl aged 14 years, had had severe nasopharyngitis for six weeks and for three weeks a stiff neck with enlarged cervical glands and temperature up to 101 F. Ice packs had reduced the adenitis but the stiff neck persisted, and she was referred with a diagnosis of "cervical abscess." Examination showed no abscess. The head was tilted toward the right with the chin to the left.

Roentgen examination showed the atlas dislocated forward on the left. The curvature of the cervical spine was obliterated.

Reduction of the dislocation and traction effected a cure.

CASE 3.—*Cervical adenitis, mastoiditis, atlo-axoid dislocation, mastoidectomy.*

W. R., a boy aged 6 years, had had a nasopharyngitis, cervical adenitis and right otitis media for twenty-eight days. A "wry neck" with head tipped to the left and chin to the right developed twenty-four hours after tenderness over the mastoid region was noted on the right side.

Roentgen examinations showed anterior dislocation of the right articulation of the atlas on the axis.

Mastoidectomy, reduction of the dislocation and traction resulted in cure.

CASE 4.—*Nasopharyngitis, left otitis media, left mastoiditis, mastoidectomy, followed by atlo-axoid dislocation.*

W. McC., aged 6 years, had been ill since Dec. 19, 1939 with nasopharyngitis and otitis media. On Jan. 6, 1940 a left mastoidectomy was done and twenty-four hours later the child had a "wry neck," holding the head toward the right with the chin to the left.

Roentgenograms showed a forward dislocation of the atlas on the axis at the left articulation.

Reduction of the dislocation and traction effected a cure.

384 Post Street.

7. Swanberg, Harold: Anterior Dislocation of Axis Following Tonsillectomy, J. A. M. A. **72**: 107-108 (Jan. 11) 1919.
8. Jones, A. R.: Dislocation of Neck at Atlanto-Axis Joint, Proc. Roy. Soc. Med. **26**: 136 (Dec.) 1932.

ROENTGEN THERAPY IN HEREDITARY DIFFUSE POLYPOSIS OF THE COLON

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Diffuse polyposis of the colon of the hereditary type is a distinct disease entity to be clearly differentiated from the postinflammatory type of polyposis, which it resembles in some respects. It is characterized by the presence of multiple, sessile or pedunculated polyps occurring throughout the large bowel and in extreme cases so numerous as almost to replace the normal mucosa. Microscopically the polyps show an adenomatous structure associated with hyperplasia of the lymph follicles and infiltration of the tumor and surrounding tissues with lymphocytes and plasma cells. Ultimately malignant degeneration almost invariably occurs in one or more polyps.

It is not a common disease, for only approximately 200 cases were to be found in the literature in 1938. Its hereditary character has been recognized only during the last twenty years. By carefully questioning one can usually uncover, in members of the family of affected persons, the presence either of the disease or of a suggestive history, such as chronic diarrhea or deaths from cancer of the colon at an early age. The abnormality appears to originate in a gene mutation and is transmitted as a mendelian dominant, but, as Lockhart-Mummery[1] states, the disease is not hereditary in the usual sense of the word. Rather, there is "an inherited instability of the epithelial cells of the large bowel which renders their nuclei peculiarly liable to undergo mutations for excessive rate of growth."

Bargen[2] describes the evolution of the disease in the following steps: First there is an underlying and

1. Lockhart-Mummery, J. P., and Dukes, C. E.: Familial Adenomatosis of the Colon and Rectum: Its Relation to Cancer, Lancet **2**: 586-589 (Sept. 9) 1939.
2. Bargen, J. Arnold: Causes of Colonic Cancer: Clinical Support of Current Hypotheses, South. M. J. **32**: 627-632 (June) 1939.

basic susceptibility. Then there occurs hyperplasia of lymph follicles followed by hyperplasia of the overlying mucosa, which forms a protrusion into the bowel lumen. Next adenomatous development occurs in these mucosal excrescences. Later, as the excessive rate of growth continues, it becomes more and more unrestrained until frank carcinomatous changes appear.

The onset of symptoms may be noted in infancy but characteristically occurs at about 20 years of age. There is hypermotility of the bowel and diarrhea with an excess of mucus in the stools, which not infrequently contain blood from ulceration of the surface of the growths. Colicky pain may arise as the result of partial obstruction by the masses of polyps. The effect on general health depends on the amount of blood lost and on the severity of diarrhea and consequent malnutrition. As soon as malignant changes make their appearance there is rapid deterioration of health with characteristic cachexia.

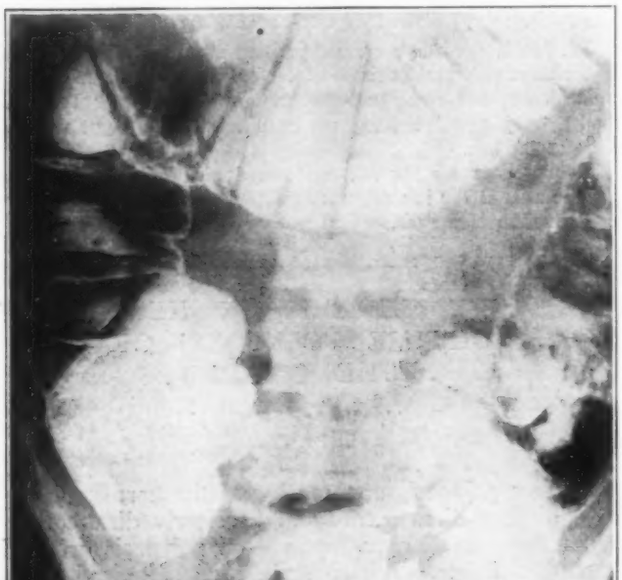

Fig. 1 (case 1).—Appearance of colon before treatment, showing great number of polyps throughout.

Because of the mildness of the early symptoms the patient is not likely to present himself for examination and treatment until a number of years have passed. According to Bargen, some of the polyps have already undergone malignant changes at the time of the first consultation in a large percentage of cases. Even when the cases are seen early there is the probability that these changes will soon supervene.

In this situation, medical measures offer little of curative value, important though they may be in relieving diarrhea, improving nutrition, combating anemia and eradicating associated infections of the bowel. In a survey of 127 published reports culled from the literature, Hullsiek [3] found that 76 patients had received only medical treatment and of these 56.5 per cent had died of the disease at the time the cases were reported. The surgically treated patients fared badly too, for of the 51 patients who were operated on 35.1 per cent died prior to reporting.

In spite of this poor showing, surgical cures are possible in some cases and it is generally held that radical surgical eradication of all lesions offers the only hope of cure. Just how tenuous that hope is cannot be definitely determined until more complete surveys are made available and actual postoperative mortalities are known.

The simplest surgical measure employed is fulguration. It is a safe and effective treatment but is applicable only to rectal and sigmoid lesions. Many cases are treated successfully and without undue risk by segmental resection if the lesions are conveniently circumscribed.

A more serious problem is presented by those extensive cases in which removal of the entire colon is necessary. Colectomy is a formidable operation, usually requiring to be done in multiple stages over a considerable period of time from six months to one or more years. The mortality mounts with each successive stage even under ideal conditions and in the hands of the most skilled surgeons. The financial burden for hospital bills, surgeons' fees and loss of time from work makes it prohibitive for all but a few. Even if the patient manages to survive the physical and financial hazards, and metastases have not occurred, he is left with a mutilated body, requiring forever special attention to nutritional and excretory functions.

In spite of the risks, total colectomy is frequently advised not only in severe, advanced cases but as a prophylactic measure in the earliest recognizable stage of the disease. This practice seems to me indefensibly radical, especially since the possibilities of more conservative measures have not been explored fully.

There are ample theoretical grounds to justify the hope and expectation that roentgen therapy may prove to be valuable in every phase of the disease. As is well known, hyperplasia of lymphatic tissues and lymphatic infiltrations are peculiarly susceptible to irradiation. Both these conditions are characteristic features of this disease. If it is true, as Bargen believes, that lymph follicle hyperplasia is the initial step in the formation of polyps, it should be possible for the disease to be permanently arrested if the patients are treated at this early stage. As was demonstrated by McKenney, many such preclinical cases could be uncovered by careful investigation of relatives in known cases.

Even after the lesions have advanced to the stage of mucosal hyperplasia and adenoma formation, the tissues are still radiosensitive because of their accelerated rate of growth and tendency to dedifferentiation. Following irradiation the tumors not only should cease to grow but should actually regress. With adequate dosage and repeated application it should be possible to prevent or at least delay the appearance of malignant change. Even after carcinomatous transformation has occurred, worth while temporary palliation and prolongation of life may be expected.

These theoretical possibilities of benefit are strong arguments for evaluating the results of roentgen therapy. Additional advantages are absence of mortality, low cost, slight disability and negligible loss of time from work.

3. Hullsiek, Harold E.: Multiple Polyposis of the Colon, Surg., Gynec. & Obst. **47**: 346-356 (Sept.) 1928.

There are a few encouraging and several inconclusive but interesting reports in the literature. In 1930 Barker [4] reported highly favorable response from high voltage roentgen therapy in an advanced case of polyposis. There was general improvement to a substantial degree, the diarrhea ceased and many of the adenomas disappeared.

Lockhart-Mummery [5] was not so pleased with his results in 1 case. Although there was temporary improvement and diminution in the size and number of polyps, he did not feel that the amount of benefit offset the severe radiation sickness.

Hullsiek [3] used roentgen treatment without any improvement. He does not state what dosage was used, but it is an interesting and pertinent commentary that the patient survived the roentgen treatment to die a few weeks later after total colectomy.

Anderson and his co-workers [6] reported no improvement in a case of postinflammatory polyposis which followed an amebic infection. Since they gave only 1,100 roentgens and observed the patient only three weeks, their experience can be discarded as inconclusive.

On the other hand, McKenney [7] questioned several roentgenologists, all of whom endorsed the use of x-rays on the basis of their unpublished experiences. He thereupon treated a series of 10 patients. Of this number 3 were already moribund. Although follow-up studies were not complete in the remaining 7, and he did not enumerate the details of treatment, he summarized his results by stating that the patients were improved symptomatically and that the polyps disappeared or were reduced in number. He abstained from making any claims of cure or recommendations for further use of this form of therapy until it had been more thoroughly evaluated.

In a subsequent paper he [8] reported the outcome with one of these patients, a boy of 11 years, who received 300 roentgens in 1932 without noticeable effect. Two years later a tumor removed from the rectum for biopsy showed "adenomatous proliferation well on the way to being malignant." After four treatments of 600 roentgens each, his condition improved. Two years later he became ill, had an abdominal fistula, and died shortly thereafter. Postmortem examination disclosed numerous malignant adenomas and a necrosing carcinoma of the rectum with abscess and fistula. Obviously the 300 roentgens given in 1932 was inadequate to control the growth of the adenomas, and subsequent dosage was insufficient to arrest for long the malignant change already apparent at the time of the second course of treatments.

In 2 cases reported here, treatment consisted of high voltage roentgen radiation solely on the basis of theoretical reasoning and without my being aware of the prior experiences cited. In both cases economic considerations made surgical treatment impossible.

4. Barker, L. F.: Polyposis of the Colon: Discussion of the Heredofamilial Occurrence of the Disease and of the Extraordinarily Favorable Effects Obtained in One Case by Deep X-Ray Therapy, M. Clin. North America **14:** 77-86 (July) 1930.

5. Lockhart-Mummery, J. P.: The Causation and Treatment of Multiple Adenomatosis of the Colon, Ann. Surg. **99:** 178-184 (Jan.) 1934.

6. Anderson, Hamilton H.; Delprat, Daniel; Weeks, Alanson, and Reed, Alfred C.: Amebiasis and Pseudopolyposis of the Colon, J. A. M. A. **107:** 2121-2123 (Dec. 26) 1936.

7. McKenney, Descum C.: Multiple Polyposis of Colon: Familial Factor and Malignant Tendency, J. A. M. A. **107:** 1871-1876 (Sept. 9) 1939.

8. McKenney, Descum C.: Multiple Polyposis of Colon: Congenital, Heredofamilial, Malignant, Am. J. Surg. **46:** 204-216 (Oct.) 1939.

REPORT OF CASES

The 2 patients were brothers. Complete investigation of the family history was not possible, but it was learned that one sister had had a resection of the sigmoid because of polyposis and that their mother, her two sisters and one brother had all died of bowel trouble.

CASE 1.—A laborer aged 45 for several years had had increasing bowel symptoms consisting of frequent loose stools containing mucus and blood, flatulence, loss of weight and strength. On proctoscopic examination many polyps were seen over all the surface visualized. The microscopic study of an excised polyp disclosed it to be an adenoma with large round cell infiltration. X-ray examination by the double contrast technic revealed widespread polyposis involving the entire colon (fig. 1).

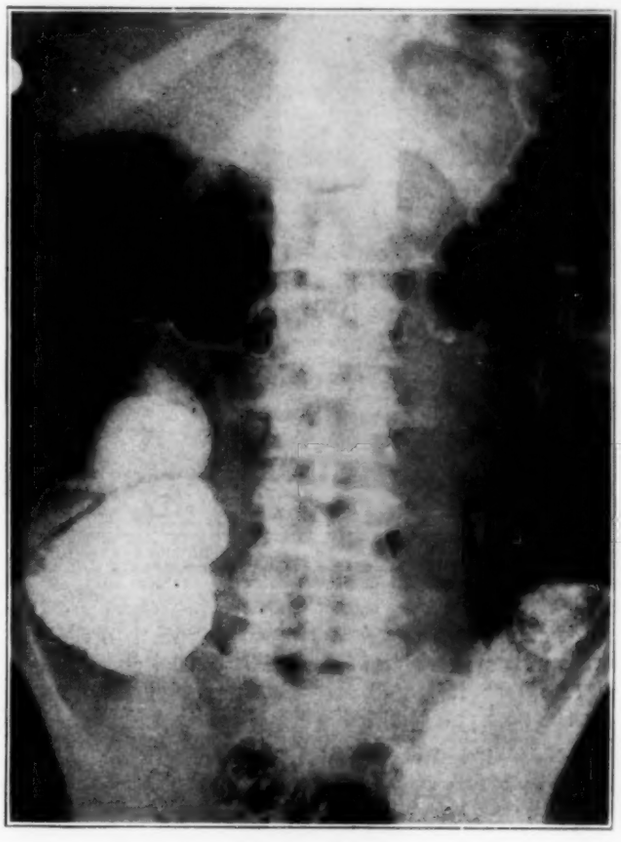

Fig. 2 (case 1).—Appearance of colon three years after roentgen treatment. Note that polyps are present only in the sigmoid.

Roentgen treatment was begun in April 1935. During the next ten weeks a total of 4,000 roentgens in fractional doses was given over each segment of the abdomen. The reaction to treatment was severe, but after it subsided there was rapid symptomatic improvement. The appetite was good, stools decreased to one or two daily, weight increased, strength became normal and the patient returned to work. He continued to feel perfectly well until April 1938, three years later, when diarrhea reappeared.

Reexamination showed almost complete disappearance of the polyps except in the sigmoid, where they were reduced in size and number (fig. 2). Treatment was repeated, 3,500 roentgens being administered over the sigmoid and 2,500 roentgens over the remainder of the colon. A moderate reaction was followed by another period of good health which lasted until February 1940. At that time diarrhea began again and the course was rapidly downhill. He did not return for treatment, and it was learned later that he had died in June 1940, more than five years after the original treatment.

This seriously ill man, almost certainly approaching a fatal termination, was restored to perfect health for almost five years. He died after a short illness, probably from carcinoma of the bowel. Although most of the polyps disappeared after the first treatment, the disease

Fig. 3 (case 2).—Appearance of colon before treatment, showing amebic ulcerations and scarring, and multiple polyps.

was not considered cured and it was planned to repeat the treatments at regular intervals. Had it been possible to do so it would have been possible to judge better the true potentiality for good of this therapy.

CASE 2.—A clerical worker, aged 33 years, after many years of intermittent diarrhea had had a diagnosis of chronic amebiasis, but specific treatment had not relieved him. At the time he presented himself for treatment he was seriously ill, completely incapacitated for work and all but bedridden. The stools were found to be teeming with amebas. Double contrast x-ray examination showed a thick walled, inflamed colon with multiple ulcerations and multiple polyps throughout (fig. 3). Roentgen treatments were given over a five month period beginning in February 1937, each area of the abdomen receiving 4,000 roentgens. There was practically no systemic reaction, and improvement began immediately.

After one year of good health he suffered a recurrence of the amebic dysentery. In May 1938 a second series of roentgen treatments was given, 2,500 roentgens to each segment. Although the amebic infection defied all efforts at eradication by specific medication, the general health improved for a time. Examination made six months later showed a diminution in the number of polyps, but the ulceration and scarring remained as before (fig. 4). Death occurred twenty-seven months after the initial treatment and was reported to have been due to amebic dysentery.

The diagnosis in this case was not conclusively established, but in view of the family history it was considered to be a case of the familial type of diffuse polyposis with an associated amebiasis. Since postmortem studies were not carried out, it is not possible to confirm the opinion held by the attending physician that death was due to amebic dysentery. Undoubtedly the presence of the polyps contributed to the intractability of the amebiasis.

I had felt particularly optimistic in beginning treatment of this patient because of the immediate ideal response. One can only conjecture the ultimate results had the complicating infection not been present. Under the circumstances one can only say that following high voltage roentgen therapy the patient was restored to apparently normal health for one year, that his condition during the succeeding year was better than it had been for many years before the treatments were given, and that the polyps decreased in number and size.

CONCLUSIONS

From the references in the literature, from theoretical considerations and from my own limited experiences it would appear that roentgen therapy is a logical and effective adjunct in the treatment of multiple polyposis. Whether "cure" can be obtained by this means remains for the future to determine, but symptomatic relief and a diminution in the size and the number of polyps may reasonably be expected.

Fig. 4 (case 2).—Appearance of colon eighteen months after first series of roentgen treatments and six months after second series. Note that scarring and amebic ulcerations persist unchanged but that most of the polyps have disappeared.

Further studies should be undertaken whenever and wherever suitable cases are encountered and a report of all results should be published, whether favorable or adverse, in order that correct evaluation may eventually be possible.

THE DEVELOPMENT OF CANCER IN ACRODERMATITIS CHRONICA ATROPHICANS

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It has often been said that cancer never develops spontaneously in an otherwise healthy, normal skin. The onset of cancer of the skin is usually preceded by certain changes which could be called precancerous.

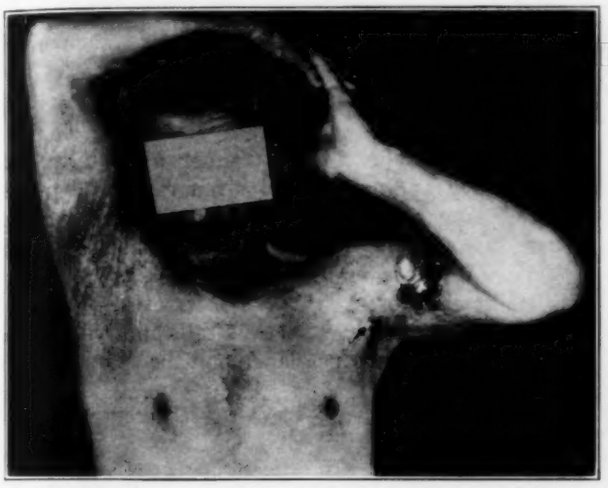

Fig. 1 (case 1).—Bilateral axillary acrodermatitis. Note atrophy, anetoderma and pigmentary changes. On the left side a large papillary, ulcerating cancer has developed.

The process is initiated by two factors at work: one an intrinsic change in the structure and functioning of the skin whereby it loses in some degree its protective capacity against injuries and the other an extrinsic factor such as mechanical trauma or chemical irritation. In experimental animals the extrinsic factor in the form of certain very potent carcinogenic hydrocarbons has proved sufficient in itself to cause the development of cancer in an apparently normal skin following a single application of the agent. Again, the ingestion of arsenic in therapeutic quantities over sufficient time may bring about the previously mentioned intrinsic changes of the skin with resultant hyperkeratinization and often multiple epitheliomas. Nevertheless, if we exclude the more highly organized neoplasms such as sweat gland cancers, adenoid cystic epitheliomas and hair matrix carcinomas, it is our contention that the majority of cancers, both squamous cell and basal cell, of the skin and stratified mucous membranes are really scar cancers.

The scars on which cancers of the larynx, buccal mucosa, lip, penis and cervix originate may have been so small as to pass previously unnoticed or to be obscured by the later more obvious cancer, but they have been present. The squamous carcinomas developing in lupus and chronic radiation dermatitis are essentially scar cancers. The genesis of this cancer may be most easily observed in all formative stages in burn scars; the process is fundamentally no different from that which occurs in a lacerated cervix, but the wide expanse or surface of the scar increases the predisposition to neoplastic changes and renders the transformation almost grossly visible. The loss of such epidermal accessories as hair follicles, sweat glands and oil glands and the inelasticity of the burn scar over joints makes the epithelial covering of the scar especially vulnerable to minute repeated and chronic injuries. Any disease of the skin which causes similar structural changes and loss of the protective function will inevitably result in the development of cancer. Even senility itself with its consequent dermal atrophy is such a state; we [1] have previously shown in a study of age incidence of epitheliomas of the skin that every person will have such a cancer if he lives long enough. It has not been generally appreciated that acrodermatitis chronica atrophicans is such a precancerous disease.

Aided by a grant from Mrs. May B. Frankel.

From the Mixed Tumor Service of the Memorial Hospital for Cancer and Allied Diseases.

HISTORY OF ACRODERMATITIS

The first known case report of this disease was published in 1883 by Buckwald,[2] who described involvement of the lower extremities in a man aged 36. Touton [3] in 1886 reported a second case with the disease affecting both arms and legs. Herxheimer and Hartmann [4] first employed the descriptive term acrodermatitis chronica atrophicans in 1902 to qualify this

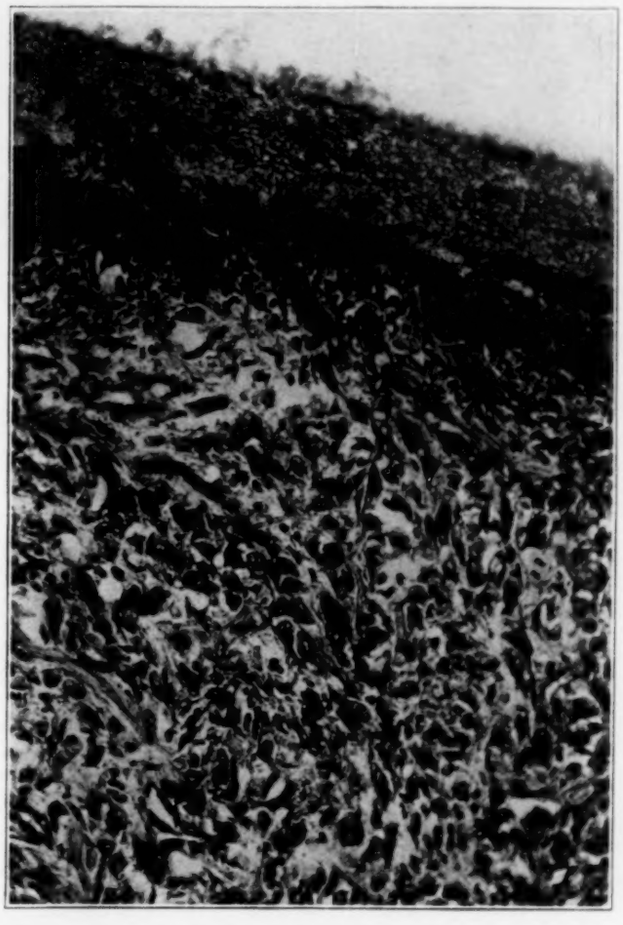

Fig. 2 (case 1).—Section of cancer developing on basis of acrodermatitis atrophicans. The spindle cell metaplasia is characteristic of epidermoid carcinoma developing in this type of skin.

1. Pack, G. T., and Wuester, W. O.: The Treatment of Malignant Tumors of the Skin, South. Surgeon **9**: 775-796 (Nov.) 1940. Treves, N. E., and Pack, G. T.: The Development of Cancer in Burn Scars, Surg., Gynec. & Obst. **51**: 749-782 (Dec.) 1930.
2. Buckwald, A.: Ein Fall von diffuser idiopathischer angeborener Hautatrophie, Vrtljschr. f. Dermat. **10**: 553-556, 1883.
3. Touton, K.: Ein Fall von erworbener, idiopathischer Atrophie der Haut, Deutsche med. Wchnschr. **12**: 6-8, 1886.
4. Herxheimer, K., and Hartmann, K.: Ueber Acrodermatitis chronica atrophicans, Arch. f. Dermat. u. Syph. **61**: 57, 155, 1902.

subgroup of skin atrophies. A close variant is Pick's erythromélie, which is characterized by atrophic areas on the dorsum of sun exposed hands of elderly persons. The anetodermis erythematodes of Jadassohn or atrophia cutis idiopathica maculosa is a type of acrodermatitis in which the patches are small, round

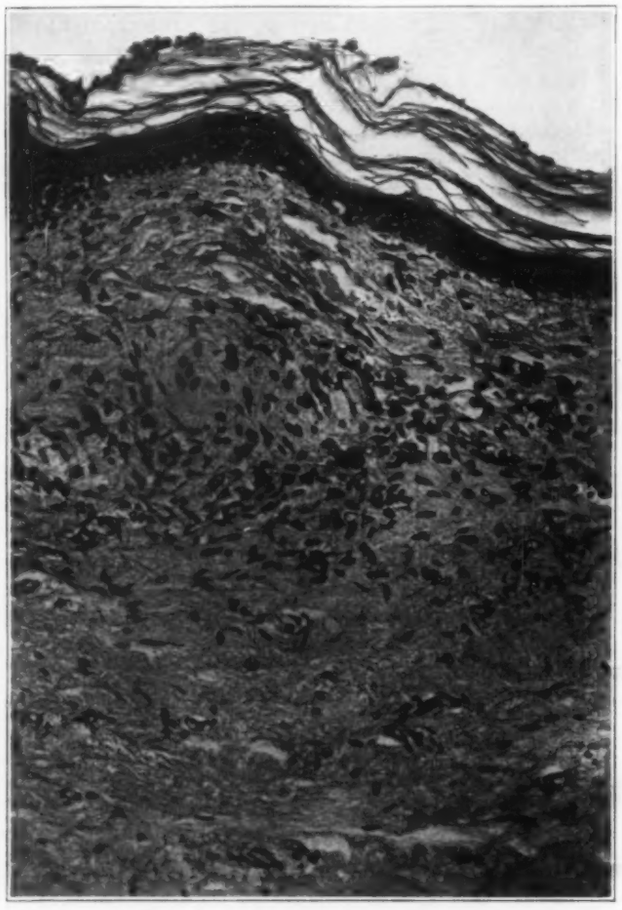

Fig. 3 (case 1).—Section of acrodermatitic skin during second stage. The rete cones and papillae are no longer present. The hair follicles, sweat glands and sebaceous glands are so sparse that none are seen in this section. The derma contains thick collagenous tissue.

or linear. The microscopic appearance is the same as in acrodermatitis except that the changes appear first in the blood vessels. The majority of investigators favor the opinion that acrodermatitis chronica atrophicans is not a true scleroderma.

ETIOLOGY OF ACRODERMATITIS

No satisfactory explanation of the genesis of this disease has been given by any of the interested investigators. It tends to occur during middle or later life, in persons with long-standing vasomotor disturbances affecting the hands and feet. In our patients the disease has been so advanced and the atrophic effects so permanent as to render useless any attempts to modify it by surgical methods directed toward the sympathetic nervous system. It has been assumed to be the result of a generalized metabolic disorder, but specific details of this condition have not been given. Sweitzer and Laymon [5] have observed the coexistence of arthritis deformans and bone atrophy with acrodermatitis chronica atrophicans. Bezecny and Berlin [6] had 1 patient with hyperthyroidism who also had acrodermatitis involving the feet, arms and face and who was cured of the acrodermatitis by thyroidectomy. In this particular instance they assume that the thyrotoxicosis may have been the exciting factor.

5. Sweitzer, S. E., and Laymon, C. W.: Acrodermatitis Chronica Atrophicans, Arch. Dermat. & Syph. **31**: 196-212 (Feb.) 1935.
6. Bezecny, R., and Berlin, E.: Zur Aetiologie der Acrodermatitis atrophicans Herxheimer, Klin. Wchnschr. **12**: 276 (Feb. 18) 1933.

REGIONAL DISTRIBUTION

Acrodermatitis chronica atrophicans has a predilection for the extensor surfaces of the extremities, especially over the joints, although it may occur in almost any region. In 1 of our patients the disease was present on the anterior and medial aspects of the upper arm, shoulders and axillas. In another patient the disease extended over the entire lower legs upward on the posterior surface of the thighs and buttocks. In a third patient the hands, thighs and skin of the abdomen were involved.

STAGES OF THE DISEASE

There are three stages of the disease which merge imperceptibly. The initial stage or phase creates an inflammatory appearance and is characterized by redness, swelling due to edema, scaling, the appearance of a serous discharge and occasionally a lymphangitis. Under the microscope the epithelium is seen to undergo only slight changes such as parakeratosis. There is a perivascular infiltration of plasma cells and lymphocytes. The sweat and sebaceous glands and the dermal papillae

Fig. 4 (case 2).—Extent and distribution of acrodermatitis chronica atrophicans on forearm and elbow. Note loss of elasticity.

appear to be normal. The most evident change in the corium is the atrophy or absence of the elastic tissue and the poorly staining qualities and homogeneity of the collagen.

The second or atrophic stage occurs after a variable time. The skin becomes superficially cracked, wrinkled and dry, owing to atrophy of the sweat and sebaceous

glands. The skin has the thinness of wrinkled cigaret paper and when picked up between the fingers it shows a lack of elastic connective tissue by its slow return to its normal position when released (anetodermia) The fine network of blood vessels appears prominent, because of the translucence of the epidermis. The color of the skin varies from white to violaceous. Although the epithelium is extremely thin, the stratum corneum may be slightly thicker than normal. The papillae and rete cones are absent or are completely flattened out (fig. 6). The hair follicles, sweat glands and oil glands are found to be either atrophic or absent in some sections on microscopic study. What few elastic fibers remain are fragmented and swollen. The collagen tissue is a dense homogeneous mass and all the edema has disappeared.

Fig. 5 (case 2).—Extent and distribution of acrodermatitis chronica atrophicans on lower extremities.

A third stage may ensue in some patients, consisting of localized skin elevations, in the form of fibrous nodules, first described by Herxheimer in 1905, or ulnar streaks or bands extending from the olecranon process to the wrist on the medial aspect of the arm. This uncommon process resembles scleroderma and represents only an extension of the second stage, which some investigators do not subdivide.

PRECANCEROUS FEATURES

The gross and microscopic characteristics of this disease reveal the reasons for neoplastic changes. A wide expanse of skin becomes atrophic, thin yet hyperkeratotic in places and lacking in the protection afforded normal skin by oil and sweat glands and the inherent elasticity of this structure. Such skin is constantly injured by the minutest trauma, especially over the joints. The condition approaches that seen in burn scars. The epitheliomas which supervene are usually of the squamous cell type which is characteristic of most scar cancers, but occasionally basal cell cancers appear. Epitheliomas which develop on the basis of x-ray dermatitis are well known to exhibit certain spindle cell metaplasias and this type of cell is sometimes found comprising the cancers which develop in acrodermatic skin (cases 1 and 2, figs. 2 and 8). Stewart has mentioned the profound degeneration of the elastica as a possible factor in this peculiar morphology of the spindle cell x-ray carcinoma; the same influence might conceivably be present in the skin of acrodermatitis, wherein the loss of the elastic tissue is one of the most distinctive features.

The relative infrequency of this precancerous disease may be estimated from the statement that in a group of more than three thousand epitheliomas of the skin treated at the Memorial Hospital there were only 4 patients in whom acrodermatitis chronica atrophicans could be considered as a determining factor. These case reports are submitted in some detail.

TREATMENT

There is no known curative remedy for acrodermatitis chronica atrophicans. It would seem logical to protect this delicate skin by the use of nonirritating emollients such as toilet hydrous wool fat or cold creams without a mineral base. The treatment of the epitheliomas developing in this skin depends on the location, histologic type of cancer and the condition of the surrounding skin. In our experience we have found that the acrodermatitic skin does not tolerate roentgen or radium dosages to the limits usually necessary to sterilize these cancers unless they are of the more radiosensitive basal cell type. There is a disappointing lack of recuperative power of the skin in this disease, and the resultant ulcerations subsequent to irradiation in necessary doses offers a serious problem in management. The occasional spindle cell carcinoma is notoriously resistant to all forms of radiation, and local recurrences are common. These cancers in general should be treated just as are burn scar cancers, by radical surgical excision whenever possible and when a curative result is anticipated, by irradiation only whenever palliation only

Fig. 6 (case 2).—Section of acrodermatitic skin during late first stage. Parakeratosis of the horny layer. Diffuse infiltration of plasma cells and lymphocytes in the corium. The blood vessels are dilated and considerable edema is present.

is expected. Metastasis from spindle cell carcinoma is by way of the lymphatics to regional lymph nodes, not generally by the blood vascular route as in the case of sarcomas. After an analysis of some two hundred epitheliomas of the skin of the extremities treated at the Memorial Hospital, the inevitable conclusion was reached that surgical excision is the only possible method of obtaining cures when metastatic cancer involves lymph nodes.

Fig. 7 (case 3).—Acrodermatitic skin of dorsum of hand after complete regression of carcinoma following radium treatment.

Fig. 8 (case 2).—Acrodermatitis chronica atrophicans of left hand. Epidermoid carcinoma developing over second metacarpophalangeal joint. Note the shining, translucent, inelastic skin.

REPORT OF CASES

CASE 1.—W. L., a man aged 60, American, a paperhanger, complained of an "ulcer" of the left upper arm of nine months' duration. For the previous six years he had been aware of atrophic changes occurring bilaterally in the skin of the axillas and medial aspect of the upper arms. When the ulcer appeared on the left arm it was untreated for three months and then a physician applied ointments for two months until large lymph nodes became palpable. He was transferred to a roentgenologist, who administered eighteen roentgen treatments with consequent slight improvement.

On July 30, 1936 the patient applied to the Memorial Hospital. The skin of each axilla and medial aspect of each upper arm was thin, transparent, hairless and atrophic. There was a complete loss of dermal elasticity. An ulcer measuring 8 by 8 by 2 cm. occupied the medial and anterior surfaces of the left upper arm. The base of the ulcer was necrotic and the edges were elevated and inflamed. There was a draining sinus high in the left axilla. The clinical diagnosis was epidermoid carcinoma of acrodermatitic skin with metastases to axillary and supraclavicular lymph nodes. A biopsy from the ulcer margin was reported as epidermoid carcinoma with spindle cell metaplasia. Aspiration biopsy of a left supraclavicular node was positive for carcinoma. A section of the atrophic skin was typical of acrodermatitis chronica atrophicans (fig. 3).

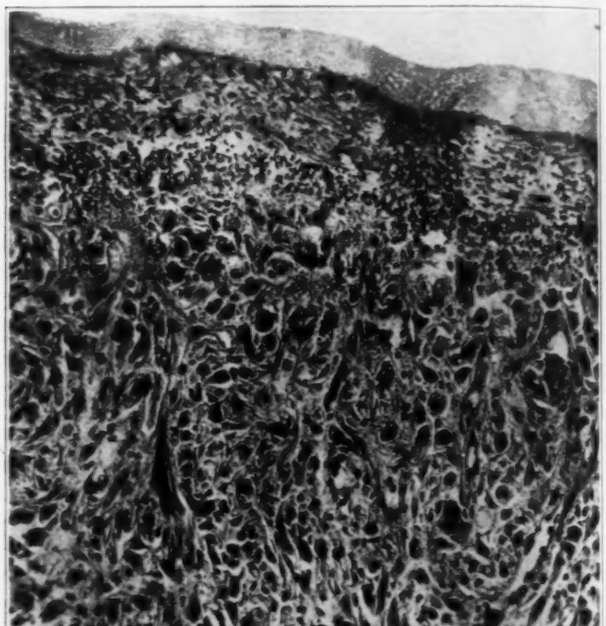

Fig. 9 (case 2).—Section of spindle cell epidermoid carcinoma developing on basis of acrodermatitis atrophicans.

The tumor was technically inoperable because the axillary nodes were large, confluent and continuous with the supraclavicular nodes. The cancer had perforated the capsules of the nodes to infiltrate diffusely throughout the pectoral region. Even an interscapulothoracic amputation would not have been successful. A roentgenogram of the chest revealed no evidence of pulmonary metastasis. Therefore radiation therapy was given. The primary cancer was treated by the 4 Gm. radium element pack with the following factors: 10 cm. radium-skin distance, filter 1 mm. of platinum, total dose of 40,000 mg.

hours. The shoulder girdle received roentgen therapy through four ports: left supraclavicular, left axilla direct, left axilla anterior, left axilla posterior. The factors were 200 kilovolts, 70 cm. target-skin distance, 250 roentgens, two ports daily for a total dose of 1,750 roentgens × 4. Palliative good results were obtained but the patient died on Feb. 7, 1937 as the result of extension of the disease.

Fig. 10 (case 4).—Epithelioma developing on skin of tibial region.

CASE 2.—B. M. F., a Russian Jewess aged 68, complained of multiple ulcers on her extremities. For thirty years she had a pruritic skin disease involving both upper and lower limbs, for which she had numerous varieties of treatment without relief. In January 1935 a small nodule appeared in the skin at the site of a scratch on the dorsum of the left hand near the distal end of the second metacarpal. Endotherm excision was done at another institution in June 1935, but a recurrence developed six weeks later.

She appeared at the Mixed Tumor Clinic of the Memorial Hospital in October 1935. At that time there was definite evidence of acrodermatitis in the skin of the upper extremities, lower extremities and buttocks (figs. 4 and 5). On the dorsum of the left hand overlying the distal end of the second metacarpal bone was an elevated, papillary, red, painful tumor, measuring 2.5 by 3 cm. (fig. 8). The skin on the dorsum of the hand and extending upward to 5 cm. above the elbow was atrophic, inelastic, glistening and fissured. The epitrochlear and axillary lymph nodes were not palpably enlarged. An ulcer 1 cm. in diameter was situated on the right ankle, and another ulcer 2 by 3 cm. in size was located on the left ankle. There was moderate edema of both ankles. The reddish blue atrophic dermatitis extended above the level of the lumbosacral region. The clinical diagnosis was multiple epidermoid carcinoma developing on the basis of acrodermatitis. The diagnoses were confirmed by biopsies of the ulcerated lesions and of the atrophic skin. The carcinoma showed spindle cell metaplasia (figs. 6 and 9).

Surgical excision and skin grafting were advised and refused. The three epitheliomas were then treated by fractionated doses of intermediate voltage roentgen rays with the following factors: 140 kilovolts, 30 cm. target-skin distance, 3 mm. of aluminum filter, 200 roentgens daily until 2,400 roentgens was administered to each of the three lesions. The patient then disappeared from observation for six months, by which time the epitheliomas of the ankles were healed but the one on the hand had grown progressively. The entire hand was now swollen and edematous, surrounding a deep, adherent painful ulcer. One left axillary node was enlarged and firm.

The index and midfingers of the left hand were amputated high through the corresponding metacarpal bones, and the left axilla was dissected on Oct. 9, 1936. The microscopic diagnosis was spindle cell carcinoma metastatic to lymph nodes. Within two weeks, several nodules appeared in the skin of the forearm. On this account the left arm was disarticulated at the shoulder on Nov. 6, 1936. The epitrochlear lymph nodes, the nodules in the skin and certain nodes lying near the median nerve in the upper arm contained metastatic spindle cell carcinoma. Within four months the patient died of pulmonary metastasis.

CASE 3.—M. G., a Portuguese woman aged 65, applied to the Memorial Hospital on Oct. 19, 1931 complaining of an ulcer on the left arm of six months' duration. On the dorsum of the left forearm just above the wrist was a papillomatous, indurated, ulcerated nontender lesion measuring 2 by 3.5 cm. There was marked atrophy, scarring, fissuring and the formation of hyperkeratoses involving the skin on the dorsum of the left hand and wrist. The clinical diagnosis was epidermoid carcinoma developing on the basis of acrodermatitis chronica atrophicans (fig. 7).

On Dec. 17, 1931 the carcinoma was removed with the actual cautery. The microscopic diagnosis was plexiform epidermoid carcinoma, grade 3. Within the next few months several keratotic lesions on the hand were treated by beta radiation, the unfiltered radon bulb being used for doses of 400 millicurie minutes to each lesion. On Oct. 3, 1932 there was no evidence of recurrence, and the patient returned to her home in the British West Indies.

On May 11, 1936 she returned to the Memorial Hospital with three new neoplasms, all developing on the acrodermatitic skin of her left hand and forearm. Biopsies proved that all were basal cell carcinomas. They were distributed as follows: (1) a lesion measuring 1 cm. in diameter situated on the extensor surface of the left forearm, (2) a lesion measuring 3 cm. situated on the dorsum of the left hand between the thumb and the index finger and (3) a lesion measuring 3 cm. on the dorsal aspect of the thenar eminence. All three basal cell carcinomas were successfully treated by the application of square and rectangular radon plaques applied at distances of 1 cm., with filters equivalent to 3 mm. of brass and doses between 800 and 1,400 millicurie hours. The last communication from the patient stated that she was well and that there was no evidence of recurrence.

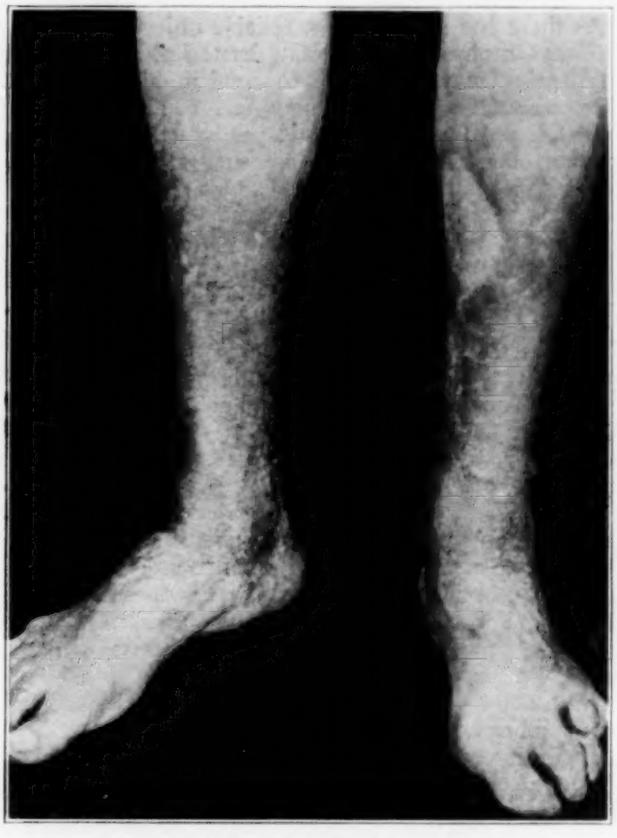

Fig. 11 (case 4).—Appearance after excision and skin grafting.

CASE 4.—C. C., an Irish woman aged 60, had had great varicosities of both legs for ten years. Three years before admission to the Memorial Hospital she noticed a pigmented, elevated lesion on the anteromedial aspect of the left lower leg. She treated it unsuccessfully by the application of boric acid ointment.

Physical examination revealed an ulcer 3 by 3 cm. situated 18 cm. above the left internal malleolus. The base of the ulcer was clean and the edges were indurated. There were no palpable inguinal lymph nodes. The skin of the left leg and the lower half of the right leg was dry, thin, translucent and atrophic. The clinical diagnosis was epidermoid carcinoma developing on the basis of acrodermatitis chronica atrophicans (figs. 10 and 11).

On Jan. 22, 1935 a wide surgical excision of this cancer was done, followed by the application of Reverdin pinch grafts. The microscopic study of the excised specimen was reported as epidermoid carcinoma, grade 2. Although the acrodermatitis has progressively become worse there has been no evidence of recurrence during the six ensuing years. When last examined in February 1941 there was no evidence of cancer.

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ELECTROENCEPHALOGRAPHY

AS A METHOD OF DISTINGUISHING TRUE FROM FALSE BLINDNESS

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As there has never been a reliable objective test for blindness, a physician suspecting hysterical blindness or malingering may be unable to confirm his diagnosis. Conversely, the physician may feel confident that a patient is not a malingerer and yet be unable to prove genuine blindness. It was just such a situation that led to this study (case 1). The value of a reliable objective test for blindness, especially in compensation cases and in military medicine, is obvious.

Electroencephalography is a method of recording the electrical activity of the brain, roughly analogous to the use of electrocardiography in studying the activity of the heart. The most prominent brain waves are the alpha waves with an approximate rhythm of 8 per second. These waves appear only with the eyes shut, as they arise almost entirely from the visual cortex and are broken up when the eyes are open and the subject looks at an object.

A uniform visual field of light or dark, or even a field containing blurred indefinite outlines, usually does not interrupt the alpha rhythm. It requires a definite visual pattern to break the alpha rhythm. If a blind or partially blind subject attempts to look at an object such as a pencil and the alpha waves persist, one can conclude that there is not enough vision left to distinguish objects or to be of practical value to the patient. On the other hand, if a supposedly blind person is asked to open his eyes and look around and the alpha waves stop, one can conclude that there is enough vision left to distinguish objects at least, and one can with reasonable safety make a diagnosis of malingering (case 2) or hysterical blindness (case 3).

The following cases illustrate the value of electroencephalography as an objective test of blindness when the diagnosis is uncertain:

CASE 1.—A man aged 38, an electrician, seen in consultation with Dr. Russell Horsfield on March 7, 1941, was working on a switch on Dec. 9, 1940, when a screw driver slipped and caused a short circuit on a 440 volt line, resulting in two bright flashes of light. The patient was blinded by the flashes and has been able only to distinguish large objects indistinctly since the accident. He has been unable to read or work and has claimed compensation. No pathologic changes could be found on examination, except contracted visual fields and the poor vision complained of. The retinas and optic disks appeared normal, and the pupils reacted to light.

There were therefore no definite objective findings to support the contention of blindness. Although this was a compensation case and malingering or hysteria seemed logical, Dr. Horsfield and I both felt that the patient was truly blind. The electroencephalograph showed alpha waves with the eyes open as well as shut and while attempting to look at a pencil (fig. 1). On the basis of this finding we recommended that the patient be compensated for his blindness. It is probable that later on there will be an optic atrophy.

CASE 2.—A man aged 45, a veteran, who had received $150 a month for claimed complete blindness since being gassed in the last war, kept his eyes tightly shut and wore dark glasses. Repeated examinations had failed to reveal any demonstrable pathologic condition, and the pupils reacted to light. Although malingering was suspected, it could never be proved. Electroencephalography showed cessation of alpha waves when he attempted to look at a pencil (fig. 2). The diagnosis of hysterical blindness or malingering was made, and observation by investigators showed that the patient was gardening and fishing with a facility not usual in one who is completely blind.

CASE 3.—A woman aged 25, with epilepsy and a superimposed neurosis, suffered from astasia abasia and complete blindness shortly after being put on phenytoin sodium and following an argument with her husband. Examination showed absence of pathologic changes, and a diagnosis of hysterical blindness was made. Electroencephalography showed cessation of the alpha rhythm when her eyes were opened (fig. 3), although she claimed she could not see a thing. This confirmed the diagnosis of hysterical blindness, which was again confirmed by the patient immediately recovering her vision under the suggestion that the recording of the brain waves was a treatment.

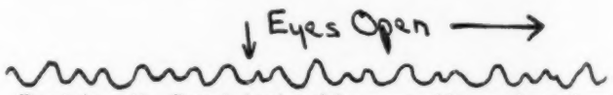

Fig. 1 (case 1).—Record showing alpha waves with eyes shut and eyes open. These waves are slower than average, a characteristic found in most records from blind people. Diagnosis, true organic blindness.

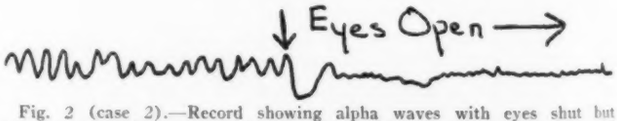

Fig. 2 (case 2).—Record showing alpha waves with eyes shut but cessation of alpha waves with eyes open. Patient claimed he still could not see with his eyes open, but the alpha waves stopped. Diagnosis malingering.

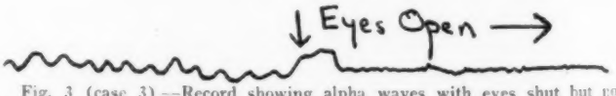

Fig. 3 (case 3).—Record showing alpha waves with eyes shut but no alpha waves with eyes open. Patient claimed she could not see with her eyes open, but the alpha waves stopped. Diagnosis hysterical blindness.

COMMENT

No further comment is necessary, except that unfortunately a few people do not have an alpha rhythm with the eyes either open or shut. In this case the test cannot be made. It is interesting to speculate on the light this study throws on the nature of hysteria. Whatever the pathologic basis of this disorder, for the first time it can be stated categorically that it is not in the sensory or motor pathways or their primary cortical centers of representation.

SUMMARY AND CONCLUSIONS

1. Electroencephalography is a reliable objective test for true blindness as opposed to malingering or hysterical blindness.

2. The persistence of alpha waves when the subject attempts to look at an object is presumptive evidence of true organic blindness to the degree of his not being able to distinguish objects clearly enough for practical purposes.

3. The cessation of alpha waves when the subject attempts to look at an object but still claims to be unable to see anything is presumptive evidence of malingering or hysterical blindness.

4. Whatever the pathologic basis of hysteria may be, it does not involve the sensory or motor pathways or their primary cortical centers of representation.

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HISTOPLASMA CAPSULATUM AS A CAUSE OF CHRONIC ULCERATIVE ENTERITIS

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Human infection with Histoplasma capsulatum is now a well recognized condition, 30 cases having been reported in detail up to the present time.[1] Incomplete information concerning 11 additional cases, some of which are in the process of publication, has been made available to us.[2] Darling [3] is credited with first describing this organism and reporting 3 cases in 1906, 1908 and 1909. However, Strong [4] is said to have reported a case in 1906, which is referred to by Meleney. No further instances were reported until 1926, but during the past few years the condition has been reported with greatly increasing frequency. Although originally believed to be a protozoon, recent studies of the organism by DeMonbreun [5] and others have shown that it is a yeast.

The clinical picture of histoplasmosis is a variable one, being in general that of a chronic, febrile illness affecting all age groups and characterized by loss of weight, weakness, splenomegaly and generalized enlargement of the lymph nodes. The literature has been carefully reviewed in a recent publication by Meleney.[6]

The case to be reported here is of particular interest in that the most prominent clinical feature was severe diarrhea, while the essential pathologic picture was an ulcerative colitis and terminal ileitis. A review of the literature, with particular attention to the occurrence of ulcerative enteritis, shows that such lesions have frequently been present although clinical evidence of enteritis has rarely been described as a conspicuous feature of the disease.

REPORT OF CASE

History.—A white man aged 70, a farmer, entered St. Mary's Hospital, Feb. 16, 1940 complaining of persistent diarrhea, loss of weight and progressive weakness. A severe diarrhea developed during the early fall when he was actively engaged in harvesting corn, five months before admission, and except for a short remission of two weeks continued through the entire course of the illness. Shortly after the symptoms began amebas are said to have been found in the stools, but in spite of treatment the diarrhea continued unabated. After the first few weeks of the illness, weakness and loss of weight were noticed. Up to the time of admission there had been a loss of 30 pounds (13.6 Kg.). The patient passed ten to fifteen liquid or semiliquid stools a day. These were white and contained soft yellow lumps. The movements were never accompanied by pain or cramping, and blood was never noticed in the stools.

The family history was not contributory. The patient had always been well prior to this illness.

Examination.—On physical examination the patient showed advanced emaciation, dehydration and weakness. He was unable to speak above a whisper. The pharynx was injected. The tongue was moist and furred. The heart and lungs were normal. The blood pressure was 80 systolic and 65 diastolic. The abdomen was distended and slightly tender. The liver was palpable five fingerbreadths below the costal margin, the edge being smooth and slightly tender to palpation. The spleen was not palpable.

On the day of admission the temperature was 97 F. and the pulse was 96 a minute. The temperature remained subnormal until the evening before death, at which time it was 102.8 F. The pulse dropped after admission to 60 beats a minute and varied between 60 and 80 a minute thereafter. A catheterized specimen of urine showed 1 + albumin with 12 pus cells per high power field. The total white cell count of the blood was 11,200 cells per cubic millimeter with 2 juveniles, 9 stab cells, 78 segmented forms and 12 lymphocytes. The red blood cell count was 3,850,000 per cubic millimeter. The nonprotein nitrogen was 50 mg. per hundred cubic centimeters and the blood sugar was 115 mg.

Course.—The patient's condition on entry was considered so grave that only supportive treatment was given. A rectal examination was done, however, and the rectal pouch was found dilated, the rectal walls being extremely tender. The day after admission the patient complained of tenderness in the right

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Read before the St. Louis Pathological Society, Feb. 7, 1941.
From the Department of Pathology, St. Louis University School of Medicine.

1. These reports include:
Williams, R. H., and Cromartie, W. J.: Histoplasmosis: Report of a Case, Ann. Int. Med. **13:** 2166-2171 (May) 1940.
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2. Moore, Morris: Personal communication to the authors. Forry and Culbertson.[11] Allen.[20] Meleney (footnotes 6 and 14).

3. Darling, S. T.: A Protozoon General Infection Producing Pseudotubercles in the Lungs and Focal Necrosis in the Liver, Spleen and Lymph Nodes, J. A. M. A. **46:** 1283-1285 (April 28) 1906; footnote 7.

4. Strong, R. P.: A Study of Some Typical Ulcerations of the Skin with Particular Reference to Their Etiology, Philippine J. Sc. **1:** 91-115, 1906; cited by Meleney.[6]

5. DeMonbreun, W. A.: The Cultivation and Cultural Characteristics of Darling's Histoplasma Capsulatum, Am. J. Trop. Med. **14:** 93-125 (March) 1934.

6. Meleney, H. E.: Histoplasmosis: A Review, Am. J. Trop. Med. **20:** 603-615 (July) 1940.

upper quadrant for the first time. He died quietly on the third day after admission. The clinical diagnosis was ulcerative colitis of undetermined cause. Amebic dysentery and an obscure malignant condition were also considered as diagnostic possibilities.

Necropsy.—Gross Appearance: The extremities showed a great degree of wasting. The chest was emphysematous and the ribs were prominent. The skin over the body was dry and scaly, with many areas of hyperkeratosis about the face. A small amount of straw colored fluid was present in the pleural and pericardial cavities. The peritoneal cavity contained 50 cc. of a seropurulent exudate a large amount of which was in the pelvic portions of the cavity. The peritoneal surfaces were covered with a diffuse fibrinous exudate, the loops of intestine being easily separated. The lower lobe of the left lung showed patchy areas of pneumonic consolidation. The coronary vessels were tortuous and there was some thickening of the cusps of the mitral and aortic valves. The liver was enlarged, the cut surface showing a nutmeg type of mottling. There was thickening of the splenic capsule with a soft, mushy pulp. The terminal ileum, cecum and colon were involved in an ulcerative process. There were approximately thirty ulcers varying from 0.5 to 1.5 cm. in diameter, the long axis lying transversely and the lesions having sharp undermined edges. One ulcer in the terminal ileum had ruptured. Several large firm lymph nodes were present in the mesentery. The kidneys were normal in size and appearance. The adrenals were of the usual size and shape but on cut section several small areas of necrosis were present.

Microscopic Appearance: Sections through the intestinal ulcers showed erosion of the mucosa and submucosa, the muscularis remaining intact except in the perforated lesions. There

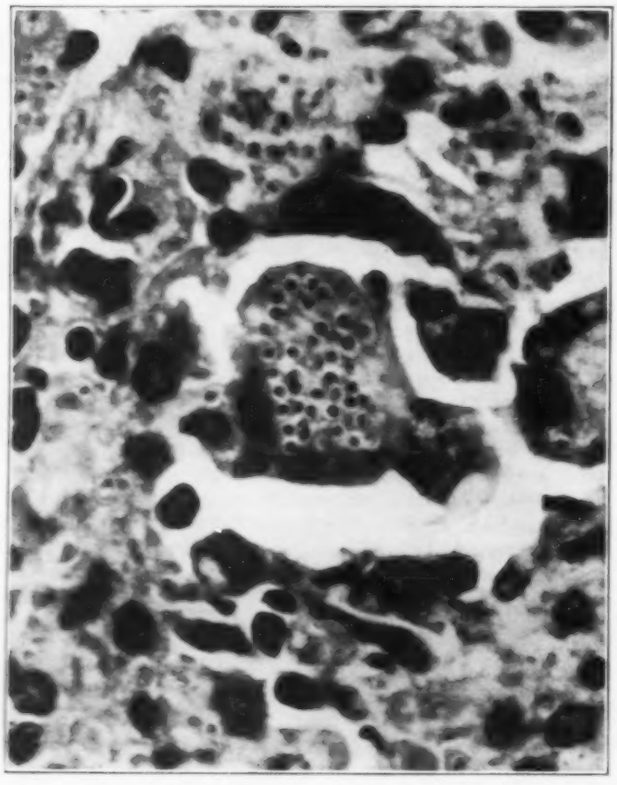


Fig. 1.—Parasitized macrophages in the base of an ulcer in the ileum. Note the characteristic, clear halo surrounding the dark staining nucleus; × 1,000.

was a base of granulation tissue in which numerous parasitized phagocytes were found (fig. 1). An occasional mucosal epithelial cell contained parasites. The cellular reaction surrounding the ulcer was granulomatous. The predominating cells were macrophages, plasma cells and lymphocytes. At a distance from the areas of ulceration there were accumulations of chronic inflammatory cells along the base of the mucosa. On the serosal surface there was a layer of fibrin, polymorphonuclear leukocytes and macrophages. The adrenals showed five to six tubercle-like lesions varying greatly in size. One large lesion had a necrotic center with a wall of chronic inflammatory cells resembling caseous tuberculosis. The necrotic center was

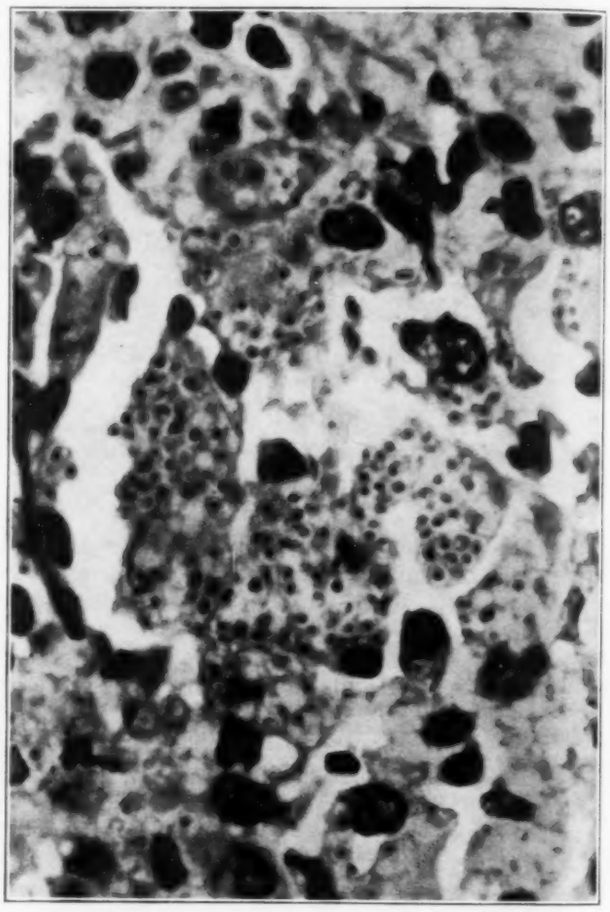


Fig. 2.—Parasitized phagocytes at the edge of the lesion in the adrenal; × 1,000.

composed of cellular débris honeycombed with round vacuoles corresponding in size to the yeast bodies. None of these vacuoles contained nuclei. Numerous parasitized phagocytes were present in the inflammatory wall (fig. 2).

Mesenteric lymph nodes showed circumscribed tubercle-like lesions with little necrosis. Occasional giant cells were seen. Numerous parasitized phagocytes were present at the edges of these lesions. There was a generalized reticuloendothelial hyperplasia.

Many small tubercle-like lesions were seen in the spleen and liver (figs. 3 and 4). They contained a central core of epithelioid cells with a peripheral ring of fibrous tissue. An occasional central giant cell was present in these lesions. Histoplasmas were rare in these lesions but in the giant cells and epithelioid cells definite vacuoles were found corresponding in size with the yeast bodies, some showing bits of degenerating nuclei. Necrosis was not present in these lesions. There was no particular relationship between the location of these pseudotubercles and the lobular structures in the liver.

A few small necrotic foci were seen in sections of the kidney and occasional parasitized cells were found in the glomeruli. Sections of lung showed bronchopneumonia, but there was no evidence of involvement with histoplasmas.

The parasite in this case was identical with the organism described by Darling with the exception of the variation in size. This range was much greater than Darling described. The organisms in the intestinal lesions were extremely small,

with eccentrically placed nuclei, while the organisms in the adrenal lesions were somewhat larger and had centrally placed nuclei. There appeared to be an increase in the capsular size with the increase in the size of the organism.

Slides were submitted to Dr. Morris Moore and Dr. W. A. D. Anderson, both of whom considered the intracellular organisms similar to the originally described Histoplasma capsulatum.

REVIEW OF LITERATURE

Of 25 cases of histoplasmosis available for careful analysis, ulcerative enteritis of variable extent was found to have been present in 8 cases. In only 2 of these cases, however, was the clinical picture suggestive of chronic enteritis, as it was in the case reported here. In 1 of these cases, and also in our case, "obscure malignancy" was considered as a probable diagnosis. The 8 cases showing intestinal involvement will be reviewed briefly, with particular reference to clinical and pathologic evidence of intestinal involvement.

Darling [7] found intestinal lesions in 2 of his 3 cases. In his original case there were a few small superficial ulcers 2 to 4 mm. in diameter in the cecum and ileum. In his third case there were fifty or more ulcers involving the entire ileum and the lower two thirds of the jejunum, showing various stages of development from infiltration to ulceration and hemorrhage. He described the various stages of the process beginning with a raised pigmented area several millimeters in diameter which became infiltrated around the periphery, showing necrosis in the center and healing by a puckered, pigmented scar. In these ulcers there were numerous parasitized endothelial cells scattered along the denuded surface and many parasites lying free on the surface.

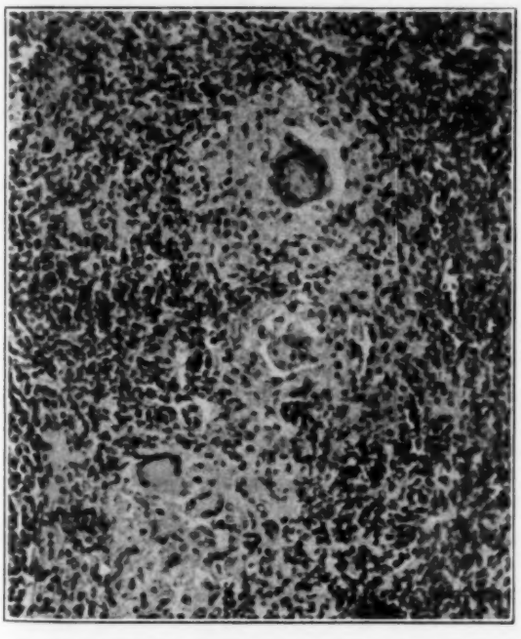


Fig. 3.—Tubercle-like lesions with giant cells in the spleen; × 200.

There was apparently no involvement of the mucosal cells. The histories of both cases were brief and there was no mention of symptoms or conditions referable to the intestinal tract.

Crumrine and Kessel,[8] reporting the second case of histoplasmosis in the United States, found an extensive ulcerative colitis involving the entire colon and rectum. The patient had complained of epigastric pain, weakness, loss of weight and diarrhea for several months. A tentative diagnosis of an obscure malignant condition

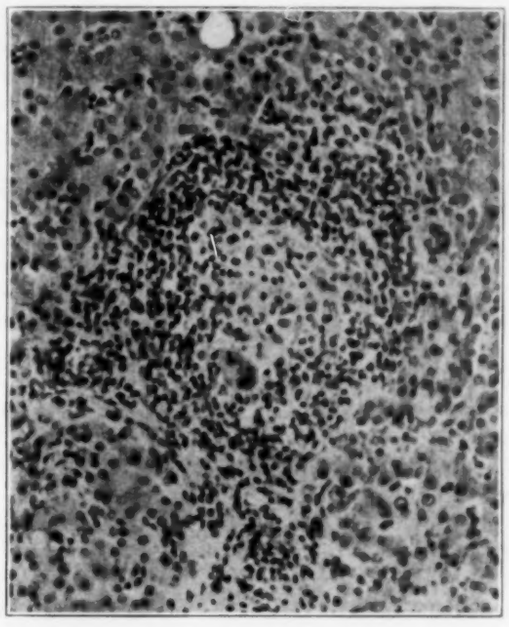


Fig. 4.—Small tubercle with giant cell in the liver; × 200.

was made. There were twenty-five to thirty ulcerated lesions in the rectum and colon varying in size from 1 to 2 cm. in diameter and having red, undermined edges. Fifty smaller lesions, 3 to 4 mm. in diameter, having red borders and a yellowish, necrotic center, showed no loss of overlying epithelium. Numerous mucosal cells as well as phagocytic cells of the submucosa were parasitized.

Agress and Gray [9] studied a case in which there were slowly healing sores about the lips, ulceration of the buccal mucosa and many tiny, superficial ulcerations through the entire large intestine. Enlarged lymphoid follicles were seen covered with normal mucosa, while in some areas the mucosa was denuded, a shallow ulcer being left extending down to the follicles. Parasitized phagocytes were occasionally seen in these collections of lymphoid tissue. Symptoms referable to the gastrointestinal tract were not present.

Ulcerated areas were found in the intestine in a case reported by Shaffer, Shaul and Mitchell.[10] A dense infiltration of large parasitized cells was found under these ulcerated areas. The accompanying inflammatory reaction was mild. Alternating diarrhea and constipation were present.

A case occurring in Indiana was diagnosed seventeen days before death by Drs. Forry and Culbertson [11] after biopsy of a cervical lymph node and careful blood studies. The patient was a 10 year old boy entering the hospital with generalized lymphadenopathy, splenomegaly and signs of sepsis. No evidence of diarrhea

7. Darling, S. T.: Histoplasmosis: A Fatal Infectious Disease Resembling Kala-Azar Found Among the Natives of Tropical America, Arch. Int. Med. **2**: 107-123 (Sept.) 1908; The Morphology of the Parasite (Histoplasma Capsulatum) and the Lesions of Histoplasmosis: A Fatal Disease of Tropical America, J. Exper. Med. **11**: 515-531 (July 17) 1909.

8. Crumrine, R. M., and Kessel, J. F.: Histoplasmosis (Darling) Without Splenomegaly, Am. J. Trop. Med. **11**: 435-449 (Nov.) 1931.

9. Agress, Harry, and Gray, S. H.: Histoplasmosis and Reticuloendothelial Hyperplasia, Am. J. Dis. Child. **57**: 573-589 (March) 1939.

10. Shaffer, F. J.; Shaul, J. F., and Mitchell, R. H.: Histoplasmosis of Darling, J. A. M. A. **113**: 484-488 (Aug. 5) 1939.

11. Forry, F., and Culbertson, C. G.: Personal communication to the authors.

was noted. At postmortem examination there was general involvement of the lymph nodes and other organs, the nodes showing patchy areas of necrosis. Throughout the large intestine and ileum there were numerous small nodule-like lesions in the submucosa. The surface was necrotic and excavated over many of these areas.

The case of Brown, Havens and Magath [12] was also diagnosed during life. Their patient complained of a persistent sore throat following extraction of a tooth. Diarrhea developed during the course of the illness. Tissue was removed from pinkish gray, granular, ulcerating lesions on the hard and soft palate which contained parasitized cells. The ulceration extended over the uvula, tonsillar areas and epiglottis and down the larynx to a point 5 cm. below the true vocal cords. In the small intestine from the ligament of Treitz to a point 18 inches (46 cm.) above the ileocecal valve, which also contained a large ulcer, there were many small, punched-out lesions from 3 mm. to 4 by 2.4 cm. in diameter. Some of the ulcers completely encircled the intestine. In the large intestine there were numerous ulcers, some having coalesced. Intracellular and free organisms were found in sections of both pharynx and intestine.

Anderson, Michelson and Dunn [13] discovered Histoplasma capsulatum in microscopic examinations of an 8 month old infant in which the most prominent clinical feature was a respiratory infection. A month before admission to the hospital there had been a transient diarrhea of three weeks' duration. Small areas of ulceration were present in the large intestine as well as petechial hemorrhages on both the serosal and the mucosal surfaces. These shallow sloping ulcers had a base of granulation tissue in which moderate numbers of parasitized mononuclear phagocytes were found. The pulmonary lesions in this case contained many histoplasmas.

12. Brown, A. E.; Havens, F. Z., and Magath, T. B.: Histoplasmosis: Report of a Case, Proc. Staff Meet., Mayo Clin. **15**: 812-816 (Dec. 18) 1940.

13. Anderson, W. A. D.; Michelson, I. D., and Dunn, T. M.: Histoplasmosis in Infancy: Report of a Case, Am. J. Clin. Path. **11**: 344-355 (April) 1941.

COMMENT

These cases of histoplasmosis showing intestinal involvement are of importance because of their similarity to other types of ulcerative enteritis. A tabulation of these cases appears in the accompanying table. This condition must be differentiated both clinically and pathologically from amebic and bacillary dysentery, tuberculous enteritis and, in certain cases, from idiopathic ulcerative colitis. The diagnosis depends, except in the latter instance, on the presence of a definite organism, which can be identified on smear or culture of the stool.

In the case reported here, it seems probable that the large macrophages, distended with histoplasmas, were seen in the stool on examination and mistaken for amebas.

Crumrine and Kessel [8] have mentioned that in all refractory cases of colitis stool examinations for fungi should be made. It is our opinion that more cases of histoplasmosis would be brought to light and more cases of ulcerative enteritis would be cleared up, from a diagnostic standpoint, if this procedure was carried out, the possibility of infection with the pathogenic fungi being kept in mind.

In most cases of histoplasmosis the intestinal lesions have been similar. The usual location is the ileum or the colon. The typical lesions are ulcers, varying in size but eroding only the mucosa and submucosa. The bases of the lesions are granulomatous, showing numerous parasitized phagocytes. Because of the shallow erosion and the large amount of granulation tissue, such complications as perforation and peritonitis are rare. Our case is the only one in which a generalized peritonitis due to perforation of one of the ulcers was present.

The tubercle-like lesions in the spleen and liver have been described in several reports but are not a constant finding. Their size and appearance have suggested sarcoid as well as tuberculosis. These lesions may be the result of systemic infection, as suggested by Meleney,[14] or they may be the result of circulating

14. Meleney, H. E.: Personal communication to the author.

Cases Showing Gastrointestinal Involvement

Author	Gastrointestinal Symptoms	Other Symptoms and Signs	Location of Intestinal Lesions	Mesenteric Lymph Nodes	Presence of Histoplasmas in Ulcers	Clinical Diagnosis
Darling [7] (1908).....	Vomiting	Fever; mental disturbance	Cecum and ileum	Enlarged and pale	No parasites found	Miliary tuberculosis
Darling [7] (1909).....	None	Progressive weakness and emaciation	Jejunum, ileum and colon	Not greatly enlarged; other groups enlarged	Parasitized cells present	None
Crumrine and Kessel [8].....	Pain in epigastrium; diarrhea	Progressive weakness and loss of weight	Rectum, colon and terminal ileum	Considerable enlargement	Parasitized mucosal and phagocytic cells	Obscure malignant condition
Agress and Gray [9].....	None	Recurrent epistaxis, night sweats; no weight gain, etc.	Large intestine	Slightly enlarged; whitish cut surface	Parasitized phagocytes in lymph follicles	Congenital syphilis, etc.
Shaffer, Shaul, Mitchell [10]	Vomiting; alternating constipation and diarrhea	Fever and drowsiness	Intestine	Enlarged and matted together	Parasitized cells below ulceration	Aleukemic leukemia
Forry and Culbertson [11]..	None	General lymphadenopathy, splenomegaly and signs of sepsis	Ileum and colon	General lymphadenophathy	Tissues surrounding the ulcer contained numerous organisms	Histoplasmosis (diagnosis on peripheral blood and lymph nodes)
Brown, Havens, Magath [12]	Dysphagia and diarrhea	Persistent sore throat	Pharynx, large and small intestine	Moderately enlarged	Numerous parasitized phagocytes	Histoplasmosis (diagnosis on tissue from pharynx)
Anderson, Michelson and Dunn [13]	Mild transient diarrhea	Draining ear; respiratory infection	Large intestine	Enlarged and firm	Parasitized phagocytes present	Bronchopneumonia with aleukemic leukemia or drug poisoning
Henderson, Pinkerton and Moore	Persistent diarrhea	Weakness	Terminal ileum, cecum and colon	Enlarged and firm	Parasitized phagocytes present	Ulcerative colitis (amebic ?); obscure malignant condition

by-products from the destruction of the yeast bodies. The latter theory parallels the suggestion of Harrell [15] that the sarcoid lesions are an exaggerated nonspecific response to a lipid fraction of an undiscovered organism. The finding of vacuolated areas corresponding in size to the yeast organisms in mononuclear cells in the lymph nodes suggests that these lesions are probably the result of a systemic spread of small numbers of organisms which are easily killed, the indestructible shell of the organism being left. The same type of vacuole is seen in the necrotic areas of the adrenal lesions, giving a honeycombed appearance to the entire area. Here, however, stages in the destruction of the yeast organisms can be followed by changes in the nuclear material. On the edge of the areas of necrosis phagocytic cells are seen containing many organisms, some showing intact nuclei and others showing various stages in nuclear destruction. Phelps and Mallory [16] have noted this appearance and suggested that the engulfed yeast organisms may be killed but that the phagocytes are unable to digest and get rid of the empty capsules.

The susceptibility of the adrenal tissue to involvement has been stressed by Meleney.[14] Why the adrenal, which so often escapes other systemic infections, should be involved in almost every case of histoplasmosis is still undetermined.

The portal of entry appears to be a controversial point. In cases of severe pulmonary involvement with generalized lymphadenopathy the respiratory route has been suggested. However, the weight of evidence appears to be in favor of the gastrointestinal route, especially in those cases showing ulcerative lesions in the alimentary tract with mesenteric lymphadenopathy. Experimental work bears this out, for DeMonbreun [17] has been able to infect dogs by feeding cultures of the fungus. In a dog having a natural infection, from which the organisms were cultured and studied by DeMonbreun, the histologic evidence pointed to gastrointestinal infection. We have attempted to infect dogs and guinea pigs by intratracheal injection of cultures of the fungus, and although the study is not complete negative results have been observed in all animals sacrificed up to the present time.

That the organism may gain entrance to the body without producing gastrointestinal lesions is shown by a study of DeMonbreun's experiments. The dogs infected by feeding cultures of the fungus and the dog with the natural infection were all free from gastrointestinal lesions, but those showing infection had mesenteric lymphadenopathy with histologic pictures ranging from hyperplasia of the reticuloendothelial cells to an inflammatory process with definite areas of caseation and fibrosis. It is apparent that involvement of mesenteric lymph nodes is some indication of infection by way of the gastrointestinal tract. Thus in many of the cases of pulmonary involvement with mesenteric lymphadenopathy a gastrointestinal portal of entry is suggested.

A review of the literature shows that all except 3 cases showed definite involvement of the mesenteric lymph nodes. Of these 3 cases, 2 were incompletely studied. Splenectomy was done in the case of Amolsch and Wax,[18] the diagnosis being made on sections of the spleen. This case terminated fatally but postmortem examination was not done. The case of Strong [4] showed a draining abscess in the chest wall from which the organisms were recovered; autopsy was not done. It is possible that such lesions were overlooked in the case of Phelps and Mallory [16] because of the lack of gross changes in the nodes. It seems probable, therefore, that almost every case of systemic infection occurs through the gastrointestinal tract with spread to the liver, spleen and lungs as a result of hematogenous or lymphohematogenous metastasis.

An attempt to determine the portal of entry by contrasting the estimated age of the lesions at various sites has been made. Humphrey,[19] in a discussion of his second case, used this criterion for establishing the gastrointestinal tract as the portal of entry. We feel, however, that these lesions, like true tubercles, are difficult to evaluate accurately from the point of view of age.

An additional case of histoplasmosis is mentioned here briefly through the courtesy of Dr. Hollis N. Allen [20] and Dr. Charles F. Sherwin. An elderly white man in apparently good health presented himself with an ulcerated area on the lateral aspect of the tongue, 1.5 cm. in diameter, suggestive of carcinoma. Biopsy showed a granulomatous lesion with many histoplasma-laden macrophages. The lesion on the tongue cleared up following radium implantation. Several months later the patient died. An autopsy was not obtained.

Van Pernis, Benson and Holinger [21] have developed a specific, cutaneous test for this disease. It has been successful in experimental and limited clinical usage, according to one of the authors.[22] This test may be of particular value as a diagnostic procedure in early cases of histoplasmosis and in cases of intestinal involvement in which other methods are not practical.

SUMMARY

In the case of histoplasmosis presented, the important clinical and pathologic features were those of ulcerative enteritis. A review of the literature shows that 8 out of 25 thoroughly studied cases showed a similar involvement pathologically but that in only 2 of these cases has there been a similar history of severe prolonged diarrhea. Stress is laid on the examination of stools for the presence of Histoplasma capsulatum. The histologic picture is discussed with particular reference to the presence of tubercle-like lesions and the apparent absence of definite organisms from the majority of these lesions. The almost constant involvement of the mesenteric lymph nodes is believed to be strong evidence in favor of the gastrointestinal tract as the portal of entry. Experimentally, attempts to infect dogs and guinea pigs by the intratracheal route have not been successful.

In a second case of histoplasmosis briefly mentioned, diagnosis was made by biopsy of a lesion on the tongue clinically suggestive of carcinoma.

1402 South Grand Boulevard.

15. Harrell, G. T.: Generalized Sarcoidosis of Boeck, Arch. Int. Med. **65:** 1003-1034 (May) 1940.
16. Phelps, B. B., and Mallory, F. B.: Toxic Cirrhosis and Primary Liver Cell Carcinoma Complicated by Histoplasmosis of the Lung, in Fifteenth Annual Report of the United States Fruit Company, Medical Department, 1926, pp. 115-122.
17. DeMonbreun, W. A.: The Dog as a Natural Host for Histoplasma Capsulatum, Am. J. Trop. Med. **19:** 565-587 (Nov.) 1939.
18. Amolsch, A. L., and Wax, J. H.: Histoplasmosis in Infancy: Report of a Case, Am. J. Path. **15:** 477-482 (July) 1939.
19. Humphrey, A. A.: Reticuloendothelial Cytomycosis, Arch. Int. Med. **65:** 902-918 (May) 1940.
20. Allen, H. N.: Personal communication to the authors.
21. Van Pernis, Paul A.; Benson, Miriam E., and Holinger, Paul H.: Specific Cutaneous Reactions with Histoplasmosis, J. A. M. A. **117:** 436-437 (Aug. 9) 1941.
22. Van Pernis, Paul A.: Personal communication to the authors.

Clinical Notes, Suggestions and New Instruments

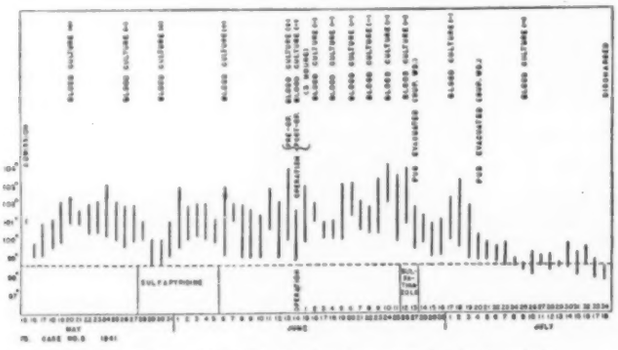
OPERATIVE CURE OF SUBACUTE STREPTOCOCCUS VIRIDANS ENDARTERITIS SUPERIMPOSED ON PATENT DUCTUS ARTERIOSUS

REPORT OF THE SECOND SUCCESSFUL CASE

ARTHUR S. W. TOUROFF, M.D.; HARRY VESELL, M.D., AND JULIUS CHASNOFF, M.D., NEW YORK

Subacute Streptococcus viridans endarteritis is one of the two most common serious complications of patent ductus arteriosus. The first operative cure of subacute Streptococcus viridans endarteritis complicating patent ductus arteriosus to be recorded in the literature was reported by two of us in October 1940.[1] Proof of the patient's recovery is afforded by the fact that she has remained entirely well and that all blood cultures have been sterile since the operation almost two years ago.

Since this case was reported, no other instance of operative cure of subacute Streptococcus viridans infection superimposed on patent ductus arteriosus has been recorded in the literature. Under the circumstances, it appears warranted to report our second successful case in the hope of encouraging others to undertake surgical therapy in suitable cases.



Clinical course of patient during her stay in the hospital.

REPORT OF CASE

History.—F. S., a native born white woman aged 29, single, an inspector of wearing apparel, was admitted to the orthopedic service of Beth Israel Hospital May 15, 1941, because of a suspected fracture of the sacrum.

Ten days prior to admission while climbing a flight of stairs she stumbled and, in an attempt to avoid a fall, twisted her body violently. Soon thereafter she suffered such severe pain in the region of the left hip that she was forced to take to bed. In spite of rest in bed for a week, the pain remained constant. Accordingly, the presence of a fracture was suspected and roentgen examination was advised. When the latter was reported to have disclosed a "possible fracture of the sacrum," the patient was referred to the hospital for treatment.

The past history revealed that, when she was 8 years old, a school physician discovered that she had a cardiac murmur. She was told that this was of congenital origin. She did not know whether she had been a "blue baby." She stated that as a child she was conscious of a "buzzing noise" in her chest but that this had disappeared as she grew older. While at school she participated actively in all games and never was aware of undue fatigue or shortness of breath on exertion. After completing her primary school education she attended high school for two years and then left to earn her own living. During the succeeding years she remained entirely well except for occasional headaches, which were ascribed by her physician to nasal polyps. The surgical history was negative except for a tonsillectomy performed during childhood.

Examination.—The patient was well developed and well nourished, her weight being 130 pounds (59 Kg.). She did not appear to be either acutely or chronically ill and had no complaint other than that of pain in the region of the left hip when she moved about in bed. The temperature on admission was 101.2 F., the pulse rate 88 and the respiratory rate 24. On orthopedic examination, the positive findings consisted of tenderness on pressure over the left buttock near the ischial tuberosity and pain over the hip on flexion of the thigh and inversion of the knee. The remainder of the physical examination was not remarkable except for the presence of a cardiac murmur to be described later.

The diagnosis made was (1) a sprain of the short muscles of the left hip and (2) congenital heart disease—patent ductus arteriosus.

After roentgen examination of the pelvis, femurs and lumbar vertebrae had proved negative, bed rest and infra-red therapy were instituted. During the patient's first five days in the hospital the temperature ranged irregularly between 99 and 102.4 F., and the pulse rate between 88 and 116. In spite of the fever, she felt entirely well except for pain in the hip. In an attempt to ascertain the cause of the continuing fever, which appeared to be unrelated to the orthopedic condition, medical consultation was requested.

On examination by one of us (J. C.), the patient did not appear ill. There was no dyspnea or cyanosis. The pharynx was not injected. The teeth were in good repair. The cervical lymph glands were not palpable. Petechiae were not noted in the fundi or conjunctivas, or on the trunk or extremities. The heart was not enlarged. Over the second interspace, about 3 to 4 cm. to the left of the midsternal line, a faint thrill was noted during systole and diastole. In the same area a rough continuous "machinery" murmur was heard. This was transmitted downward to the third interspace and upward to the region of the clavicle. The systolic component was transmitted to the aortic area and was heard faintly over the vessels of the neck. The diastolic component was transmitted only as far as the left sternal border. The heart sounds were detectable posteriorly, mesial to the vertebral border of the left scapula, but no murmurs were heard in this area. The second aortic sound was slightly accentuated; the second pulmonic sound was normal.

The lungs were clear; the cervical veins were not unduly filled and the liver was not palpable. There was no edema or other evidence of cardiac failure. The spleen was not palpable. There was no clubbing of the fingers. The blood pressure was 114 systolic and 60 diastolic in the right arm and 106 systolic and 60 diastolic in the left.

The tentative diagnosis of subacute Streptococcus viridans endarteritis complicating patent ductus arteriosus was made. A blood culture was ordered immediately. After several days the latter was reported positive for Streptococcus viridans (15 colonies per cubic centimeter). Twelve days after admission to the hospital, the patient was transferred to the medical service for further investigation.

Laboratory Data.—A teleroentgenogram revealed the cardiac shadow to be relatively small. The contour was somewhat deformed owing to distinct prominence in the region of the pulmonic arc suggestive of dilatation of the pulmonary artery. The ascending curve of the aortic arch was inconspicuous. The right ventricle was not enlarged. The four lead electrocardiogram was normal. Axis deviation was not noted. A phonocardiogram revealed the murmur over the pulmonic area to be continuous through systole and diastole. The specific gravity of the urine ranged up to 1.026. A faint trace of albumin was present on several occasions. Rarely a red blood cell was noted in a low power field in the uncatheterized specimen from time to time. No casts were found. The blood contained 4,240,000 red cells per cubic millimeter. The hemoglobin content was 80 per cent. There were 7,100 white cells, of which 75 per cent were polymorphonuclear leukocytes and

From the Medical Service of Dr. I. W. Held and the Thoracic Surgical Service of Dr. Arthur S. W. Touroff, Beth Israel Hospital.

1. Touroff, A. S. W., and Vesell, Harry: Subacute Streptococcus Viridans Endarteritis Complicating Patent Ductus Arteriosus, J. A. M. A. **115**: 1270 (Oct. 12) 1940.

25 per cent mononuclear cells. The erythrocyte sedimentation rate on two occasions was 50 and 37 mm. in forty-five minutes. Blood volume was 3,000 cc., plasma volume 2,000 cc. The Wassermann, Kline and Kahn tests gave negative results. Additional blood cultures, taken on the twelfth, sixteenth and twenty-third day of observation, revealed 0, 100 and 177 colonies of Streptococcus viridans per cubic centimeter, respectively, after forty-eight hours of incubation.

During a thirty-one day period of preoperative observation, the temperature varied between 98.6 and 104 F., and the spleen became palpable. Chemotherapy was instituted thirteen days after admission to the hospital. In three days, 16 Gm. of sulfapyridine was administered by mouth, and a blood concentration of 6.6 Gm. per hundred cubic centimeters was established. Severe nausea and vomiting then supervened and necessitated discontinuance of oral administration of the drug. During the three day period in which sulfapyridine was administered, the temperature fell to a somewhat lower level, but a blood culture taken on the last day revealed 100 colonies of Streptococcus viridans per cubic centimeter after forty-eight hours of incubation. During the next four days a total of 36 Gm. of the drug was administered by rectum. Oral administration then was reinstituted but had to be discontinued because of recurrence of nausea and vomiting after 8 Gm. of the drug had been given in two days. A blood culture taken the next day revealed 177 colonies of Streptococcus viridans per cubic centimeter after forty-eight hours of incubation. By this time (about three and one-half weeks after admission), the patient's general condition had deteriorated considerably; the prominent clinical manifestations were loss of weight and strength, progressive anemia and a continuously septic temperature.

As in other cases that we have reported,[2] the outlook for recovery under medical therapy did not appear encouraging. Accordingly, after being unable to detect evidence of other associated congenital cardiac defects and valvular lesions, surgical treatment was considered. Although the exact duration of the infection was unknown, the short clinical course and the lack of evidence of extension of vegetations to the aorta and the left side of the heart, together with the lack of evidence of peripheral embolization and petechiae, seemed to indicate that the infection in all probability was of relatively recent origin. It was for the latter reason particularly that operation appeared to offer a fair chance of success.

Operation.—A blood culture taken on June 14, 1941 at 9 a. m. revealed 80 colonies of Streptococcus viridans per cubic centimeter after forty-eight hours of incubation. In the afternoon of the same day, operation was performed (by A. S. W. T.) under cyclopropane anesthesia. A left-sided anterior thoracic incision was made in the second intercostal space. The second and third costal cartilages were divided and the pleural cavity was entered. The edges of the wound were retracted widely and the lung was permitted to collapse in order to expose the aortic arch and the left pulmonary pedicle. A well defined tremor and thrill were present over the base of the heart and pulmonary artery. These phenomena were not noted in the region of the apex. A vertical incision was made in the mediastinal pleura, and the under surface of the aortic arch and the adjacent pulmonary artery were dissected free from one another in order to expose the ductus arteriosus. The aorta measured 1 inch (2.5 cm.) in diameter and the pulmonary artery 1½ inches (3.8 cm.) in diameter. The ductus measured approximately ⅜ inch (1 cm.) long and ½ inch (1.3 cm.) in diameter. When the ductus was compressed, the pulse rate was not slowed appreciably, but the diastolic pressure rose approximately 20 mm. of mercury. The recurrent laryngeal nerve was dissected out carefully and retracted laterally. The ductus then was stripped free on its upper, lower and anterolateral surfaces. As was noted in the cases of infectious involvement which we reported previously,[2] the posteromesial surface of the ductus was adherent to the adjoining structures. A plane of dissection was entered within the adventitia of the aorta, near the angle between the under surface of the aortic arch and the upper surface of the ductus. The dissection then was carried downward and laterally behind the aortic arch within the adventitia of the aorta immediately adjacent to the ductus. The same plane within the aortic adventitia was entered near the lower surface of the ductus and dissection carried upward and mesially beyond the aortic arch until the posterior surface of the latter, immediately adjacent to the ductus, was entirely free. The plane of separation then was developed for a short distance behind the posteromesial surface of the ductus, thus completely freeing the latter in the region adjacent to the aorta.[3]

Two heavy silk ligatures were next passed beneath the freed ductus on an aneurysm needle. The pulse rate at this juncture was 150 and the blood pressure 150 systolic and 80 diastolic. Both ligatures then were tied snugly alongside one another. After ductal ligation, the pulse rate fell to 120, the blood pressure rose to 154 systolic and 96 diastolic, and the thrill and bruit disappeared. The incision in the mediastinal pleura was left open, and the thorax was closed in layers. Immediately before the thoracic closure was completed the lung was expanded by positive pressure. The patient left the operating room in good condition, the pulse rate being 120 and of good quality.

Postoperative Course.—The immediate reaction to operation was good. The temperature, which had been almost 104 F. on the day preceding operation, declined during the first four days. However, it then again became irregular. On the fifth postoperative day, 700 cc. of blood-tinged fluid, which subsequently was reported to be sterile, was aspirated from the left side of the chest.

Nine postoperative blood cultures were taken, and all remained sterile throughout three and one-half to four weeks of incubation. The first culture was taken three hours after completion of the operation and the succeeding cultures on the second, fourth, sixth, eighth, tenth, twelfth, seventeenth and twenty-fifth postoperative days, respectively. Some of these blood specimens were arterial as well as venous.

In view of the repeatedly sterile blood cultures and the fact that the patient appeared to be improving progressively in spite of the irregular temperature, it appeared warranted to assume that the continued fever was not due to the persistence of the original infection. Accordingly a careful search was made daily for some other cause, without success. Finally, on the twelfth postoperative day, the administration of sulfathiazole was begun. On the following day evidence of infection of the superficial wound was discovered, some pus was evacuated from the healed operative incision and the use of sulfathiazole was discontinued at once. One week later an adjacent, small, purulent collection was evacuated, following which the temperature subsided satisfactorily. It is to be emphasized that the total quantity of sulfathiazole administered following operation was 10 Gm. and that all blood cultures (six) taken up to the time of the administration of the drug previously had been reported sterile. Under the circumstances, it is entirely justifiable to state that the use of sulfathiazole was not responsible for recovery from the Streptococcus viridans infection.

When the patient was discharged from the hospital on the thirty-fourth postoperative day, after fourteen days of almost

2. Touroff, A. S. W., and Vesell, Harry: Experiences in the Surgical Treatment of Subacute Streptococcus Viridans Endarteritis Complicating Patent Ductus Arteriosus, J. Thoracic Surg. **10**: 59 (Oct.) 1940.

3. The technic of freeing the ductus, described here and to be reported in greater detail in a forthcoming article, was employed in an attempt to minimize the likelihood of accidental hemorrhage. As was pointed out in a previous communication,[2] when infection supervenes in cases of patent ductus, the latter structure often becomes friable as the result of infectional changes. Furthermore, periarteritis occurs not infrequently and results in firm adherence of the ductus to the surrounding structures, especially to the right branch of the pulmonary artery that lies behind it. Thus in separating the posteromesial wall of the ductus from the right branch of the pulmonary artery, both the ductus and the immediately adjacent pulmonary artery may be torn. This accident may result in serious and often fatal hemorrhage. Since the walls of the ductus are thickest and strongest immediately adjacent to the aorta, the chances of accidentally tearing the ductus are minimized by confining the dissection to this area. Furthermore, in this region the right branch of the pulmonary artery diverges from the ductus, and thus the chances of accidentally tearing the former structure during the dissection also are reduced. In view of the not infrequent difficulty of establishing, with the commonly employed technic, a complete plane of cleavage behind the ductus, an apparently safer method is to begin and to complete the dissection on the aorta as described and then to continue it behind the adjoining posteromesial wall of the ductus itself.

normal temperature, she was symptom free, the wound was well healed and she appeared in good physical condition. She then was referred to a convalescent home with instructions to return to the hospital in four weeks. During a thirty-one day stay in the country, she gained 8 pounds (3,629 Gm.) and felt entirely well except for occasional pain in the healed operative wound.

On readmission to the hospital for a check-up examination, sixty-five days after the operation, she was entirely symptom free. Physical examination was negative except for the presence of a short, slightly rough systolic murmur at the second intercostal space immediately to the left of the sternum. This murmur was not transmitted. The spleen no longer was palpable. The blood contained 4,500,000 red blood cells per cubic millimeter. The hemoglobin content was 98 per cent. There were 6,000 white blood cells, of which 42 per cent were polymorphonuclear leukocytes and 58 per cent mononuclear cells. The erythrocyte sedimentation rate was 11 mm. in forty-five minutes. The blood pressure was 118 systolic and 78 diastolic. Circulation time, venous pressure and blood volume were normal. The urine revealed no red blood cells or albumin. Three blood cultures taken forty-eight hours apart, including one arterial specimen, were sterile. Roentgen examination revealed the contour of the heart to have become practically normal. Kymographic examination disclosed that the pulsation of the pulmonary artery was of about the same amplitude as that of the aorta. The ventricular movement was normal. The electrocardiogram revealed only slight changes, as compared with the one taken before operation. The cardiac rate now was 75 instead of 111. There was some elevation of RT and an increase in amplitude of T in the limb leads. A small Q_3 was present. The chest leads CF 4 were similar. CF 1, 2, 3, 4 and 5 were normal.

On the basis of these observations, the assumption that the bacterial infection had not recurred was warranted. Accordingly the patient was discharged. When last examined on December 6, twenty-five weeks after operation, she appeared in excellent health and was employed steadily. Her weight was 131½ pounds (59.6 Kg.).

SUMMARY

A woman aged 29 with a congenital cardiac lesion, discovered during childhood, came under observation because of a suspected traumatic fracture of the sacrum. After investigation had failed to disclose such a fracture the diagnosis of a sprain of the short muscles of the left hip was made. Because of the presence of irregular fever, which did not appear to be related to the orthopedic condition, further investigation was carried out and the diagnosis of patent ductus arteriosus with superimposed subacute Streptococcus viridans endarteritis was established. During a thirty-one day period of hospital observation, the clinical course was one of sepsis and progressive deterioration. Blood cultures revealed as many as 177 colonies of Streptococcus viridans per cubic centimeter. Sulfapyridine was administered for nine days, but the use of the drug had to be terminated abruptly because of intractable nausea and vomiting. Accordingly, after no evidence of associated congenital cardiac defects or valvular lesions was found, surgical ligation of the ductus was undertaken in the hope of eliminating the infection. Operation was performed by a modified technic calculated to reduce the likelihood of accidental hemorrhage. The postoperative course, except for the occurrence of infection of the superficial wound, was uneventful. A blood culture taken three hours after operation and eleven blood cultures taken subsequently were sterile. Twenty-five weeks have elapsed since the operation and the patient remains well.

This is the second case in which operation on a patient suffering from patent ductus arteriosus complicated by subacute Streptococcus viridans endarteritis has resulted in recovery from the bacterial infection.

CONCLUSIONS

The recovery, following an operation, of a second patient with patent ductus arteriosus complicated by subacute Streptococcus viridans endarteritis appears to indicate that such results are not fortuitous. By tending to support further our original contention that surgical treatment is a logical form of therapy in this disease, it should encourage others to operate during the early stages of infection if other methods fail to result in prompt recovery.

ADDENDUM.—Two patients with subacute Streptococcus viridans endarteritis superimposed on patent ductus arteriosus have been operated on since this paper was written. Both have had repeatedly negative blood cultures since operation and apparently have recovered completely. In neither case were sulfonamide drugs employed postoperatively.

940 Park Avenue—302 West 90th Street—8 East 83rd Street.

SULFATHIAZOLE AS AN ADJUNCT TO SURGERY IN ADVANCED ACUTE APPENDICITIS

ROBERT K. ANDERSON, M.D., CHICAGO

In a series of 206 patients with appendicitis operated on at the Norwegian-American Hospital between May 1 and Oct. 17, 1941 there were 22 (10.6 per cent) with advanced disease of the appendix. These patients were treated with sulfathiazole as an adjunct to surgery. In this group there was 1 death.

The severity of the disease in these 22 cases of appendicitis may be appreciated by the following data: The average duration of illness (excluding 1 case of twenty-one days' duration) before operation was seventy-one and one-half hours. Eleven of the patients had a perforated appendix, 7 had a gangrenous appendix, 3 had advanced, acutely inflamed, suppurative appendicitis, and 1 had an inflammatory mass with abscess involving the ileocecal junction.

In 18 cases the sulfathiazole was used immediately as an adjunct to surgery. In this group sulfathiazole was given intraperitoneally in 17 cases and in 5 of these additional sulfathiazole was given intravenously or orally. The average total dose in this group was 14.3 Gm. The average duration of hospitalization in this group was fourteen days. Complications were few. In 15 cases there were no complications. In 1 case pleurisy developed, in 1 an infected wound developed which drained for several weeks and in 1 hyperpyrexia and convulsions developed which resulted in death. This child, aged 5 years, was ill for thirty-two hours before operation. A perforated appendix was found. Five Gm. of the medication was given intraperitoneally and death occurred twenty hours after the operation. The development of convulsions was unusual and unexplainable. Detailed studies were not possible and the exact cause of death remains unknown. Permission for autopsy was not secured.

In 4 cases sulfathiazole was used late following operation in the treatment of complications of appendicitis. In 2 a local peritonitis developed followed by large abdominal abscesses of the wall; in 1 a pelvic abscess developed which finally perforated into the rectum and drained spontaneously, and in 1 peritonitis developed followed later by a pleurisy. In this group the sulfathiazole was given orally and intravenously as sodium sulfathiazole. The average dose was 35 Gm. The average duration of hospitalization was twenty-eight days and in all cases recovery finally occurred.

RESULTS

1. In this series of 22 patients with advanced disease of the appendix treated by removal of the appendix and with sulfathiazole medication there was 1 death, a mortality of 4.5 per cent.

2. In the cases in which sulfathiazole was used immediately there was a relatively short period of hospitalization—fourteen days.

3. In the cases in which sulfathiazole was used immediately there were few complications, 3 in 18 cases.

4. It was found that immediate use of from 8 to 10 Gm. intraperitoneally and 2 Gm. in the abdominal wall was most effective.

CONCLUSIONS

Sulfathiazole is an effective adjunct to surgery in cases of severe advanced acute appendicitis and in the complications of appendicitis.

1044 North Francisco Avenue.

The attending surgeons of the Norwegian-American Hospital allowed the author to report on their cases.

CEREBRAL NECROSIS IN SICKLE CELL DISEASE

JOHN H. CONNELL, M.D., NEW ORLEANS

Since Herrick in 1910 first pointed out the peculiar sickling tendency of red blood cells in the condition now generally (though inaccurately) called sickle cell anemia, various clinical manifestations of the disease have been recognized, and systemic involvement is probably much commoner than is usually realized. Few cases of involvement of the central nervous system have been recorded in the literature, and for this reason I am putting on record the following case of sickle cell disease with neurologic phenomena in which extensive cerebral necrosis due to the sickling tendency of the red blood cells was found at autopsy.

REPORT OF CASE

A. J., a Negro woman aged 20, unmarried, entered the Huey P. Long Hospital at Pineville, La., Aug. 28, 1941 and died three days later. The history was not satisfactory. She complained chiefly of headache, right-sided deafness and drowsiness. The headache and deafness had appeared at the same time, about six days previously, and the drowsiness a few hours later. The headache, which had been continuous, was limited to the left side. The patient also suffered from extreme anorexia, and any movement, even about the bed, caused nausea and vomiting. She had become increasingly more weak since the onset of the illness.

There had been no similar attack in the past, but six years before the present illness the patient had had an attack of what she described as rheumatism accompanied by left-sided paralysis. Recovery had been complete except for a residual weakness of the left arm and leg. There was no history of syphilis and her menstrual history was without incident.

On physical examination the patient was drowsy and seemed quite ill but could be roused, and when roused she answered questions coherently. The temperature was 100 F., the pulse rate 68 per minute and regular and the blood pressure 125

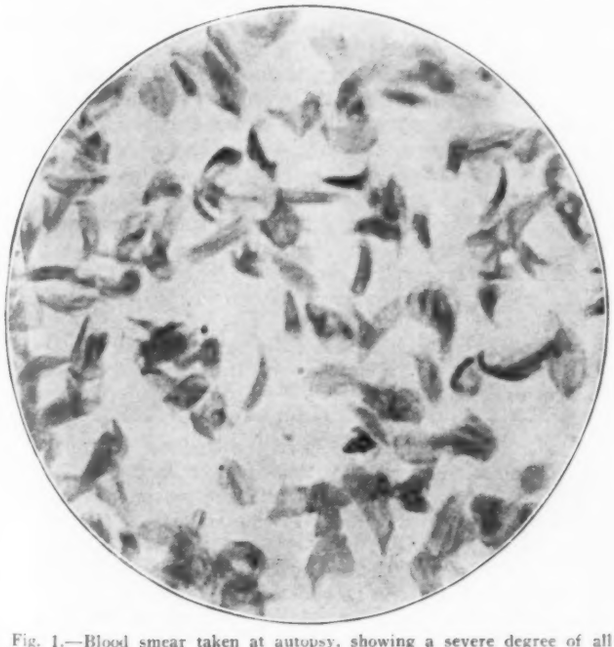


Fig. 1.—Blood smear taken at autopsy, showing a severe degree of all types of sickling.

systolic and 75 diastolic. The pupils were equal and reacted to light and in accommodation. The hearing in the left ear was unimpaired but the patient was almost totally deaf in the right ear. The reflexes were sluggish but equal. The examination otherwise revealed only the residual weakness of the left arm and leg already mentioned.

The blood Wassermann reaction was negative. Spinal puncture shortly after the patient was admitted to the hospital showed the fluid to be under normal pressure (5 mm. of mercury). The cell count was less than 10 and the test for globulin was negative. Examination of the blood showed hemoglobin 60 per cent (10.4 Gm.), 3,450,000 red cells and 14,150 white cells per cubic millimeter and 87 per cent polymorphonuclear cells. The sedimentation rate was forty minutes. The

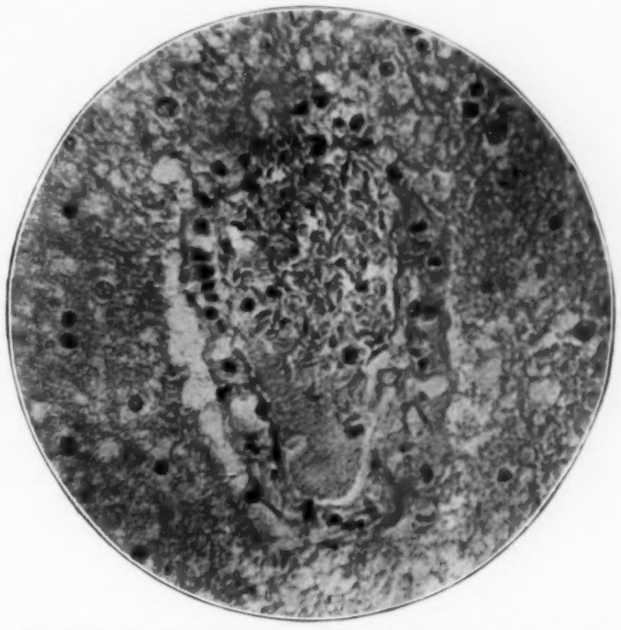


Fig. 2.—Section from edge of necrotic area in left hemisphere, showing sickled red cells forming a thrombus which is undergoing organization. The surrounding brain tissue shows degenerative changes.

nonprotein nitrogen was 37 mg. per hundred cubic centimeters of blood and the dextrose 87 mg. per hundred cubic centimeters.

Three days after she had been admitted to the hospital, and before a diagnosis had been made, the patient suddenly became comatose. Examination at this time showed the left pupil larger than the right; it did not react to light. The neck was somewhat stiff and a pharyngeal paralysis was soon manifested by considerable amounts of mucus in the throat. No abdominal reflexes could be elicited and all the other reflexes were weak. The temperature promptly rose to 104.6 F., the pulse rate to 120 and the respiratory rate to 60 a minute. Examination of the spinal fluid again showed the cell count to be less than 10 and the test for globulin was again negative, but the fluid, although clear, was now under increased pressure (20 mm. of mercury). The temperature was 105.5 F. and the pulse rate 150 a minute when the patient died twelve hours after the onset of the coma.

Autopsy.—Postmortem examination, which was performed three hours after death, revealed no conditions of importance to the present discussion except in the spleen and the brain. The spleen, on gross examination, appeared to be a brown fibrotic piece of tissue, a sort of miniature organ weighing only 2 Gm. Its appearance immediately suggested the diagnosis of sickle cell disease; blood smears were taken and on examination later revealed a severe degree of sickling (fig. 1).

Examination of the skull showed no changes in the external or internal surface. The entire brain appeared edematous. The dura was considerably thickened and pigmented throughout, the pigmentation being especially noticeable in the region of the midbrain. The right cerebral hemisphere was somewhat smaller than the left. Sections revealed (1) massive necrosis of the left cerebral hemisphere, chiefly involving the white matter but also impinging on the gray, though sparing the corpus callosum and other major nerve tracts (there was a firm red blood clot in the left middle cerebral artery); (2) an old cystic pigmented lesion 5 cm. in its largest diameter in the right cerebral hemisphere, with destruction of considerable white matter, and (3) an old cystic pigmented lesion 2 cm. in its largest diameter in the right cerebellar lobe.

Microscopic examination of the various organs revealed only passive congestion except in the spleen and the brain. In the spleen the normal tissue had been completely replaced by pigmented fibrous tissue.

Examination of the brain tissue adjacent to the old cystic lesions in the right hemisphere and cerebellum showed atrophic changes and corpora amylacea. Endothelial proliferation and hyalinization were observed in the smaller arterioles. The neurogenic macrophages contained pigment. Tissue from the left hemisphere showed massive necrosis with the usual attendant inflammatory reaction. Sections through a terminal portion of the left middle cerebral artery showed a red thrombus with beginning organization and with resultant parenchymal atrophy of the adjacent brain tissue. All the vessels in the brain were filled with greatly distorted sickled red blood cells (fig. 2).

COMMENT

Sicklemia, or the tendency of blood to sickle, is a constitutional tendency to abnormal erythropoiesis, that is the production of elongated, semilunar erythrocytes which are destroyed by the body defenses as abnormal cells. The disease, which is inherited as a dominant mendelian characteristic, is seen chiefly in the pure Mediterranean races and in the American Negro, in whom the tendency is reported to exist in 7.5 per cent of all members of the race.

The single constant finding associated with sicklemia is anemia due to destruction of the red blood cells by the body defenses. Actually, however, the anemia is seldom severe and is only rarely the cause of death, so that the term sickle cell anemia, by which the disease is generally known, is really misleading in that it directs the attention away from more important considerations. Far more important from the pathologic point of view is the fact that in this disease the elliptic blood cells which occur are poorly adapted, because of their shape, to pass through the circulation, which is really a circuit of tubular conduits. As a result, the red cells stagnate in certain parts of the blood stream, obstruction follows and a state of local anoxemia develops which causes still further alterations in the shape of the red blood cells. The smaller arterioles become occluded and the consequent thrombosis terminates in local ischemia and necrosis, especially in areas in which there is an inadequate collateral circulation. The essential pathologic process is the same in all organs, though it is conditioned by the local anatomy. Thus the jaundice by which excessive hemolysis is manifested is due to stagnation in the spleen, which causes first congestion and enlargement and then what amounts to secondary destruction of the organ, as in this case. Renal infarction and mesenteric infarction can be explained on the same basis, and Vance and Fisher [1] have recently pointed out that thrombotic lesions in the bone marrow may cause fat embolism.

In view of these facts, which are now quite well known, it is surprising that more attention has not been paid to the tissues of the body which are most sensitive to even temporary anoxemia, that is the tissues of the nervous system. Yet involvement of the central nervous system in cases of sickle cell disease does not seem even to have been mentioned in the literature until 1923, when Sydenstricker, Mulherin and Houseal [2] reported a fatal instance in a 5 year old Negro boy. To date only 31 cases have been recorded, 6 of which were reported by Hughes, Diggs and Gillespie,[3] who also collected and analyzed the 25 cases previously reported. Morphologic changes in the brain were reported at autopsy in only 7 cases, and in only 4 of the 7 (reported by Cook,[4] Ford [5] and Hughes and his associates [3]) was the association noted of cerebral necrosis and focal symptoms. So far as can be determined, the case which I am reporting at this time is the fifth recorded instance of cerebral necrosis associated with sickle cell disease and is apparently the most severe to be put on record.

I observed no similar case during the course of a rather extensive experience on Negro subjects with sickle cell disease submitted to autopsy in the Charity Hospital of Louisiana at New Orleans over a recent ten year period. I believe, however, that this was not because such cases did not occur but because lesions in the central nervous system were not borne in mind and consistently looked for. A retrospective analysis of symptoms in many cases of sickle cell disease observed at autopsy leads me to believe that cerebral lesions probably existed in a number of instances and would have been found if only they had been sought.

Because of the multiplicity of cerebral functions, the symptomatology of cerebral involvement in sickle cell disease is unpredictable. Hughes and his associates, on the basis of the 31 cases which they observed or collected, listed the most important symptoms, in the order of frequency, as drowsiness or coma, hemiplegia, aphasia, headache, convulsions, stiffness or pain in the back and neck, abdominal pain, irritability, facial weakness, pain and stiffness in the legs and back, ocular disturbances and vomiting. The symptoms vary in intensity. The ultimate prognosis is poor, but temporary recovery frequently ensues. Since the lesions are usually intracranial and hemorrhage is not a factor, examination of the spinal fluid gives no reliable information, though increased pressure was observed several times in the reported cases, as in my own case.

The interpretation of this case is not difficult: A Negro woman had a sickling tendency which was unrecognized during life, including the period of her fatal illness. Six years before this illness, during a period of lowered resistance, which possibly was the result of rheumatic fever, a lesion evidently developed in the right cerebral hemisphere which caused a temporary left hemiplegia. The major nerve tracts and motor areas were not involved, as postmortem examination demonstrated, and the paralysis was therefore not permanent. The episode was typical of sickle cell disease. Its clinical manifestations are apparently precipitated by some intercurrent disease, some surgical or other trauma or any other factor that lowers the patient's resistance. During such periods the tendency to sickling is exacerbated and the morphology of numbers of red blood cells is so altered that adverse physiologic conditions result. In this case the precipitating factor was rheumatic fever and the cerebral lesion was the result.

The patient's history was not satisfactory, but it seems reasonable to assume, in view of the postmortem examination, that during subsequent periods of exacerbation the meninges and cerebellum were involved in the sickle cell disease and the spleen was almost completely obliterated. The last exacerbation, although gradual in onset, was enormous in its final proportions, as shown both by the fatal outcome and by the massive necrosis of the left cerebral hemisphere found at postmortem examination.

This case is an excellent illustration of the advice given by Bauer [6] that routine testing of the blood of Negro patients for sickling is more valuable than many other laboratory tests which are far more complicated and time-consuming and which are likely to be used without special indications. In the case here reported, however, the nature of the pathologic process was such that even if the diagnosis had been made the patient's life could not have been saved.[7]

SUMMARY AND CONCLUSIONS

1. A consideration of the fundamental pathologic physiology of sickle cell disease makes it clear that the important pathologic process is not anemia, as the misleading term sickle cell

1. Vance, B. M., and Fisher, R. C.: Sickle Cell Disease: Two Cases, One Presenting Fat Embolism as a Fatal Complication, Arch. Path. **32:** 378-386 (Sept.) 1941.
2. Sydenstricker, V. P.; Mulherin, W. A., and Houseal, R. W.: Sickle Cell Anemia: Report of Two Cases in Children, with Necropsy in One Case, Am. J. Dis. Child. **26:** 132-154 (Aug.) 1923.
3. Hughes, J. G.; Diggs, L. W., and Gillespie, C. E.: The Involvement of the Nervous System in Sickle Cell Anemia, J. Pediat. **17:** 166-184 (Aug.) 1940.
4. Cook, W. C.: A Case of Sickle Cell Anemia with Associated Subarachnoid Hemorrhage, J. Med. **11:** 541-542 (Dec.) 1930.
5. Ford, F. R.: Diseases of the Nervous System in Infancy, Childhood and Adolescence, Springfield, Charles C. Thomas, Publisher, 1937.
6. Bauer, Julius: Sickle Cell Disease; Pathogenic, Clinical and Therapeutic Considerations, Arch. Surg. **41:** 1344-1362 (Dec.) 1940.
7. Since this article was written D. W. Walker and J. P. Murphy (J. Pediat. **19:** 28 [July] 1941 have reported a case of sickle cell anemia complicated by rheumatic heart disease with cerebral hemorrhage and necrosis. The cause of the cerebral lesion in a child was not understood after autopsy. This is apparently another case in which rheumatic fever caused an exacerbation of the sickling tendency of the red cells with resultant cerebral thrombosis followed by necrosis and hemorrhage.

anemia would imply, but thrombosis. It may therefore involve any organ, particularly any organ with a terminal circulation. If this concept of the disease were generally adopted, antemortem diagnoses would be more frequent.

2. In the light of these basic facts, lesions of the central nervous system are probably not uncommon in sickle cell disease. They are not being recognized because they are not being looked for and not because they do not exist.

3. This is the fifth and apparently the most extensive case of cerebral necrosis associated with sickle cell disease to be recorded.

803 Audubon Building.

Council on Industrial Health

MEDICAL SERVICE IN INDUSTRY

THE COUNCIL ON INDUSTRIAL HEALTH HAS APPROVED THIS ARTICLE AS THE FIFTH IN A SERIES ON MEDICAL SERVICE IN INDUSTRY.

C. M. PETERSON, M.D., Secretary.

OUTLINE OF PROCEDURE FOR PHYSICIANS IN INDUSTRY

The Council on Industrial Health has prepared this outline as a convenient reference and guide for physicians interested in industrial medical relationships. The purpose of medicine in industry is to promote the health and physical well-being of industrial employees. These objectives should be accomplished by:

1. Prevention of disease or injury in industry by establishing proper medical supervision over industrial materials, processes, environments and workers.
2. Health conservation of workers through physical supervision and education.
3. Medical and surgical care to restore health and earning capacity as promptly as possible following industrial accident or disease.

An industrial physician is one who serves employed individuals or groups on authorization of a third party having a valid interest.

DUTIES OF THE PHYSICIAN IN INDUSTRY

Prevention.—The physician should acquaint himself by regular inspections with all materials and processes used in the working environment over which he has supervision, to the end that he may recommend appropriate protection of employees from conditions actually or potentially harmful.

Industrial Physical Examinations. — Preplacement physical examinations should be complete. They should be used only for the purpose of assigning work adjusted to the physical and temperamental fitness of applicants and to maintain safe and healthful employment for all employees.

Subsequent physical examinations should be complete enough to provide positive health protection for all workers and to safeguard the public welfare. Repetition of such physical examinations must be determined by the physician in accordance with specific requirements.

In the interest of completeness and uniformity, physical examination forms are recommended. Personal records of this character are confidential and should always be kept in the custody of the medical department. Access to these records should be granted only on request or consent of the examinee.

The examining physician should acquaint the examinee with the results of all examinations or take steps to refer all conditions requiring correction to the physician of the worker's choice.

Health Education.—The plant physician should take advantage of all opportunities for beneficial instruction of the workmen in hygienic living both in and out of the industrial environment.

Medical and Surgical Care.—1. Treatment of Compensable Injuries and Diseases: The disabled worker should be free to choose his physician from all those licensed doctors of medicine competent to supply the required services except in situations provided for by chapter III, article VI, section 3 of the Principles of Medical Ethics, which reads as follows:

The phrase "free choice of physician," as applied to contract practice, is defined to mean that degree of freedom in choosing a physician which can be exercised under usual conditions of employment between patient and physician when no third party has a valid interest or intervenes. The interjection of a third party who has a valid interest or who intervenes does not per se cause a contract to be unethical. A "valid interest" is one where, by law or necessity, a third party is legally responsible either for the cost of care or for indemnity. "Intervention" is the voluntary assumption of partial or full financial responsibility for medical care. Intervention shall not proscribe endeavor by component or constituent medical societies to maintain high quality of service rendered by members serving under approved sickness service agreements between such societies and governmental boards or bureaus and approved by the respective societies.

2. Treatment of Noncompensable Injuries and Diseases: The treatment of injuries or diseases not industrially induced is the function of private medical practice. The physician in his industrial relationships should abstain from such services except in the case of:

A. Minor ailments. The physician in industry may treat minor physical disorders which temporarily interfere with an employee's comfort or ability to complete a shift, and for the relief of which he may need immediate medical attention.

B. First aid for urgent sickness. The physician in industry should employ such measures as the emergency dictates in all cases of urgent sickness occurring during working hours on the working premises, until such time as prompt notification of the family physician relieves him of further responsibility.

C. Rehabilitation after sickness and injury. The physician in industry can properly assume responsibility for those phases of rehabilitation after disability industrially induced or otherwise, which progress best under controlled working conditions.

GENERAL RELATIONSHIPS

The Employer. — Adequate industrial medical supervision requires full or part time service of doctors of medicine, depending on size of plant, location, prevalence of dangerous health exposures and other considerations. In every case a physician's relation to industry is improved if he does not solicit the appointment.

Written contracts between a physician and an employer are usually unnecessary. If a contract seems desirable, a copy should be filed with the local county medical society.

The Employee. — Adequate industrial health conservation depends on cooperation from workmen. They must therefore receive the same courtesy and professional honesty as do private patients.

Physicians who serve in industry should not devote time or facilities properly belonging to industrial medical administration to diagnose or treat dependents of employees or members of plant administrative or supervisory staffs, except in the absence of accessible independent private facilities.

Industrial Nurses and Nonprofessional Assistants.—Industrial physicians should be responsible for the proper instruction and subsequent activities of nurses and other assistants. Their functions should be described in clear and comprehensive written orders posted in the medical department. There should be no delegation of services requiring expert medical attention.

Consultants.—Assistance should be asked of consultants in industrial medicine, surgery or hygiene or in the clinical specialties whenever the interests of the workmen demand it. In the control of working environment the same consulting arrangements should be entered into with industrial hygienists and safety engineers.

Official Health Agencies.—The physician in industry should consider himself as a deputy health officer in practice if not in fact. Assistance from bureaus of industrial hygiene in many state and local governments to control healthful working conditions is available. In return the physician in industry should cooperate by accumulating and reporting compilations of dependable data on the relation of occupation to morbidity and mortality.

Workmen's Compensation and Rehabilitation Agencies.—Medical and surgical management in every case of industrial injury or disease should aim to restore the disabled worker to his former earning power and occupation as completely as possible and without unnecessary delay. Concise, dependable

medical reports promptly submitted to those agencies entitled to them are a part of this obligation. In the same way, equitable administration of workmen's compensation rests on medical testimony which adheres closely to reasonable scientific deductions regarding the injury or possible sequelae, to the end that every deserving claim may receive full indemnity under the statutes.

Medical Organizations.—Physicians in industry should participate in the organizational and educational activities of general and special medical societies and of hospitals to the end that the objectives and contributions of industrial health may be recognized and available to the medical profession at large.

Assistance in the organization and conduct of industrial medical services is available from committees on industrial health in many state and county medical societies and from committees representing the specialty groups which make up the Scientific Assembly of the American Medical Association. Specific inquiries on all matters relating to industrial health may be directed to the Council on Industrial Health, American Medical Association, 535 North Dearborn Street, Chicago.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. HOWARD A. CARTER, Secretary.

VACOLITE MODEL D HEARING AID ACCEPTABLE

Manufacturer: Vacolite Company, 3003 North Henderson Street, Dallas, Texas.

This instrument is of the vacuum tube type. Dimensions and weights of the various parts are as follows:

Microphone and amplifier unit serial number 3112, ovoid shape, 4½ inches by 2⅜ inches by 1 inch, with knob volume control at bottom of instrument. Weight 5½ ounces.

Crystal receiver, 1 inch diameter by 3/16 inch thick.

Battery assembly, A and B battery in a single unit, 3½ by 3½ by 1⅛ inches, weight 11.3 ounces. The A battery is replaceable independently of the B battery.

The A battery is 1.5 volts and showed a current drain of 65 milliamperes. The B battery has a voltage of 22 volts and a current drain of 0.24 milliampere. A 33 volt B battery is the regular size usually furnished.

INTERNAL NOISE

The instrument is fairly quiet, and noise due to impact on microphone and rubbing of the cords is not excessive. The instrument, with fitted earpiece, could be turned full on without feed-back squeal.

Vacolite Model D Hearing Aid.

ACOUSTICAL GAIN

A patented feature of the instrument is a "frequency control," operated by means of a single screw on the back of the microphone unit. As far as could be determined, the effect of turning this screw through the whole range from the extreme counter-clockwise to the extreme clockwise position was to lower the gain produced over the frequency range up to 1,024 cycles inclusive and to increase the gain by about 4 decibels at 4,096 cycles. Using audiometric tests with a hard of hearing subject, the following gains were shown:

Frequency Control Setting	128	256	512	1,024	2,048	4,096	Cycles
Extreme counterclockwise position	6	12	17	23	27	15	decibels
Extreme clockwise position	—3	—2	—5	+17	+21	+19	decibels

Using pure tones at normal ear threshold with the instrument full on showed gains as follows:

Frequency Control	128—256	512—2,048	4,096	
Counterclockwise position	Nil	24—39	13	decibels

ARTICULATION

The usual syllable and sentence lists were used with hard of hearing subjects at a distance of 5 feet in a quiet room and showed satisfactory results.

The Council voted to accept the Vacolite Model D Hearing Aid for inclusion on its list of accepted devices.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED THE FOLLOWING REPORT FOR PUBLICATION. AUSTIN E. SMITH, M.D., Acting Secretary.

BISMUTH ETHYLCAMPHORATE

(The Upjohn Company)

A preliminary report on Bismuth Ethylcamphorate, The Upjohn Company, was published by the Council in 1939.[1] This compound was stated to be a liposoluble bismuth salt of ethyl camphoric acid which the firm proposed for intramuscular injection to obtain the systemic effects of bismuth in the treatment of syphilis. The proposed adult dose was 1 cc. for a course of twelve injections. Each cubic centimeter contains 40 mg. of elemental bismuth, 0.10 Gm. of camphor and 0.025 cc. of benzyl alcohol dissolved in sweet almond oil. Because the Council considered the evidence at that time to be insufficient to allow proper evaluation of the drug, it voted to postpone consideration until further data became available and to publish a preliminary report.

Since the date of that report the Council has received communications from the Upjohn Company presenting more clinical data. In 1940 the firm forwarded the results of investigations by Drs. Thurman and Benotti (from the Clinic of Dermatology and Syphilology of the Boston Dispensary and the Chemistry Laboratory of the Joseph H. Pratt Diagnostic Hospital, units of the New England Medical Center and Department of Medicine, Tufts College Medical School, Boston) relating to the urinary excretion of elementary bismuth in the urine of patients treated with Bismuth Ethylcamphorate. After considering the protocols, the referee pointed out that with a single intramuscular injection of 40 mg. (1 cc.) of Bismuth Ethylcamphorate the average daily excretion for the first week was 0.88 mg., the second week 0.63 mg. and the third week 0.92 mg.; with a single injection of 80 mg. (2 cc.) the average daily excretion for the first week was 1.79 mg., the second week 1.32 mg. and the third week 0.45 mg. When 40 mg. (1 cc.) was administered for three injections at seven day intervals, the average daily excretion in 3 patients for the first week was 1.23 mg., 1.73 mg. and 1.8 mg. respectively. During the second week the average excretion was 1.73 mg., 1.74 mg. and 3.15 mg. respectively; and for the third week, it was 2.21 mg., 1.66 mg. and 3.72 mg. When 80 mg. (2 cc.) of the compound was injected once weekly for three weeks, the average daily bismuth excretion in the 3 patients was 1.7 mg., 1.84 mg. and 2.23 mg. for the first week; 3.04 mg., 2.31 mg. and 3.5 mg. for the second week; 3.9 mg., 1.47 mg. and 3.4 mg. in the third week. The evidence indicated that 2 cc. must be injected at least every five to seven days in order to maintain a daily urinary excretion of 2 mg. of metallic bismuth, the level which the Council recognizes as indicating therapeutic antisyphilitic potentialities for a parent bismuth compound. The Council considered the submitted evidence and voted that sufficient evidence had not yet been presented, especially in relation to the rate of disappearance of the organisms and healing of lesions.

In May 1941 the Council office received a communication from the firm enclosing protocols of the treatment of 17 cases of early syphilis by Dr. M. L. Barnes of the University of Louisville, representing a study of the disappearance of spirochetes and healing of lesions after the use of Bismuth Ethylcamphorate; protocols of 26 cases of early syphilis treated at the Dallas Syphilis and Venereal Disease Clinic by Dr. L. J. Alexander; and a tabulation summarizing the data now available concerning

1. J. A. M. A. **113:** 1569 (Oct. 21) 1939.

time of disappearance of organisms and healing of lesions in all cases of early syphilis treated with 1 cc. and 2 cc. doses of Bismuth Ethylcamphorate at varing intervals. As one would expect from the excretion studies, the spirochetes disappeared more rapidly when injections of 2 cc. were used than when 1 cc. was employed. The time required for the disappearance of the organisms varied with the dose, the limits being one to fourteen days, with an average of six days for the entire group. With the use of Bismuth Ethylcamphorate, primary lesions were found to have healed satisfactorily usually in from one to two weeks, and secondary and tertiary lesions likewise to respond in a favorable manner.

During the early investigations, doses of 1 cc. appeared to be better tolerated than 2 cc., but later it was found that doses of 2 cc. were satisfactorily tolerated. When injected intramuscularly, the compound is comparatively painless.

After considering all the available evidence the Council voted to recognize Bismuth Ethylcamphorate, The Upjohn Company, as a satisfactory bismuth compound for the treatment of syphilis when used in amounts of 30 mg. (2 cc.) injected intramuscularly every five to seven days and when used where a bismuth compound is indicated in such therapy.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Acting Secretary.

ZINC PEROXIDE MEDICINAL.—A mixture consisting essentially of zinc peroxide, ZnO_2, with varying amounts of zinc oxide, ZnO, and zinc hydroxide, $Zn(OH)_2$. The zinc peroxide content is not less than 45.5 per cent, equivalent to not less than 7.5 per cent of available oxygen.

Actions and Uses.—See general article, Metallic Peroxides. (New and Nonofficial Remedies, 1941, p. 385.)

Dosage.—Zinc peroxide medicinal (powder) sterilized in small quantities (10 to 50 Gm.) by heating in a dry oven for four hours at *exactly* 140 C. is made up with sterile distilled water to a smooth, creamy suspension of about the consistency of heavy (40 per cent) cream. The dose depends entirely on the size of the wound to be treated. Enough of the creamy suspension should be used to provide the surface of the wound with a layer approximately ⅛ inch thick. If the suspension is too thin it runs off. If it is too thick it may not come in contact with all surfaces in the crevices of the wound. The suspension should be a cream and not a paste. The first layer, applied readily with a syringe, is then covered over with a thin layer of cotton soaked in the suspension and this in turn covered with a thick layer of cotton wet with water and then sealed with an impermeable covering or coating of some kind. Dressings are usually changed in twenty-four hours but may be left for several days.

Zinc peroxide medicinal occurs as a fine, white, odorless, crystalline powder. It is insoluble in water but forms a smooth paste which does not cake or harden. A 5 per cent aqueous suspension of zinc peroxide medicinal separates to yield a clear supernatant liquid in thirty minutes, and bubbles of oxygen appear from the sediment.

Suspend 0.2 Gm. of zinc peroxide medicinal in 10 cc. of water, add diluted hydrochloric acid dropwise until the bulk of the solid is dissolved and then add 1 cc. of sodium acetate solution. Filter the mixture and divide the filtrate into two portions. Boil one portion to remove peroxides and finally cool: the solution responds to tests for zinc. Acidify the other portion with 1 cc. of diluted sulfuric acid: the solution responds to tests for peroxides.

Transfer approximately 3 Gm. of zinc peroxide medicinal to a beaker containing 50 cc. of distilled water, add 20 cc. of diluted nitric acid and dilute to about 100 cc. with distilled water. Add 25 cc. of tenth-normal silver nitrate, digest on the steam bath, filter and wash the precipitate with distilled water. Combine the filtrate and washings and titrate the mixture with tenth-normal potassium thiocyanate to a faint brown color, using 3 cc. of ferric ammonium sulfate solution as the indicator. Prepare and titrate a blank control: the difference between the volumes of thiocyanate solution observed in the two titrations is equivalent to a chloride content not greater than 1 per cent.

Transfer approximately 0.3 Gm. of zinc peroxide medicinal, accurately weighed, to a 250 cc. Erlenmeyer flask containing 50 cc. of diluted sulfuric acid. Shake the mixture until the powder dissolves and titrate the solution to a faint, permanent, pink color with tenth-normal potassium permanganate. The zinc peroxide content is not less than 45.5 per cent and the available oxygen content not less than 7.5 per cent (1 cc. of tenth-normal potassium permanganate is equivalent to 4.869 mg. of zinc peroxide, ZnO_2, or 0.8 mg. of available oxygen).

Heat about 100 Gm. of zinc peroxide medicinal in a 250 cc. cotton plugged Erlenmeyer flask in an oven at 135-140 C. for four hours. Cool the flask and contents to room temperature, mix the material well by shaking, allow to stand at least ten hours, mix again and use this heat-treated material for the following tests:

Transfer 5 Gm. of the heat-treated material to a beaker, add 100 cc. of distilled water and shake thoroughly. After allowing the mixture to stand for fifteen minutes, determine the *p*H at 25 C. by means of a glass electrode. The *p*H is not less than 7.0 nor more than 8.5.

Transfer approximately 5 Gm. of the heat-treated material, accurately weighed, to a 250 cc. Erlenmeyer flask, add 100 cc. of distilled water at 37.5 C. and mix thoroughly. Submerge the flask and contents in a constant temperature water bath at 37.5 C. for two hours and finally filter through a fritted glass funnel. Wash the residue with 5 cc. of distilled water; acidify the combined filtrate and washings with 20 cc. of diluted sulfuric acid and titrate to a faint, permanent, pink color with tenth-normal potassium permanganate: the active oxygen content is not less than 0.01 per cent *(soluble peroxides)*.

Transfer 5 Gm. of the heat-treated material to a dry 125 cc. Erlenmeyer flask, add 25 cc. of distilled water at 37.5 C. and mix well. Fill the flask with distilled water at 37.5 C., shake thoroughly and immediately insert a stopper equipped with a lead-over tube. The lead-over tube should extend to within 1 cm. of the bottom of the flask and, when inserted, should be filled with liquid. Submerge the flask and contents in a constant temperature water bath at 37.5 C. and place a 25 cc. burette which has been filled to the lowest calibration mark with distilled water, beneath the end of the lead-over tube. Measure the volume of liquid displaced after twenty-four hours: the volume of liquid displaced is not less than 12 cc.

MERCK & CO., INC., RAHWAY, N. J.

Zinc Peroxide-Special Medicinal *(powder)*: 1 ounce, ¼ pound, and 1 pound bottles.

MALLINCKRODT CHEMICAL WORKS, ST. LOUIS.

Zinc Peroxide 45% ZnO_2 Medicinal *(powder)*: ¼ pound bottle.

OVARIES (See New and Nonofficial Remedies, 1941, p. 372).

The following preparations have been accepted:

THE LAKESIDE LABORATORIES, INC., MILWAUKEE.

Tablets of Estrogens: 1000 I. U., 2000 I. U., and 4000 I. U.

Ampule Solution of Estrogens (in oil): 1 cc. Each cubic centimeter contains the equivalent of 2,000 international units of estrone and 0.5 per cent chlorobutanol as a preservative in sesame oil.

Solution of Estrogens (in oil): 25 cc. rubber stoppered vials. Each cubic centimeter contains the equivalent of 2,000 international units of estrone and 0.5 per cent of chlorobutanol as a preservative in sesame oil.

Ampule Solution of Estrogens (in oil): 1 cc. Each cubic centimeter contains the equivalent of 5,000 international units of estrone and 0.5 per cent of chlorobutanol as a preservative in sesame oil.

Solution of Estrogens (in oil): 15 cc. rubber stoppered vials. Each cubic centimeter contains the equivalent of 5,000 international units of estrone and 0.5 per cent of chlorobutanol as a preservative in sesame oil.

Ampule Solution of Estrogens (in oil): 1 cc. Each cubic centimeter contains the equivalent of 10,000 international units of estrone and 0.5 per cent of chlorobutanol as a preservative in sesame oil.

Solution of Estrogens (in oil): 15 cc. rubber stoppered vials. Each cubic centimeter contains the equivalent of 10,000 international units of estrone and 0.5 per cent of chlorobutanol as a preservative in sesame oil.

ALUMINUM HYDROXIDE GEL (See THE JOURNAL, Nov. 1, 1941, p. 1539).

The following preparation has been accepted:

MACALLISTER LABORATORY, CLEVELAND.

Aluminum Hydroxide Gel: one pint and one gallon bottles. Contains 4.6 per cent aluminum hydroxide (equivalent to 3.0 per cent aluminum oxide) with saccharin-U. S. P. and oil of peppermint-U. S. P. as flavoring agents.

BISMUTH SUBSALICYLATE (See New and Nonofficial Remedies, 1941, p. 155).

GEORGE A. BREON & COMPANY, INC., KANSAS CITY, MO.

Bismuth Subsalicylate in Oil Suspension with 3% Chlorobutanol: 30 and 60 cc. rubber-capped vials. Each cubic centimeter contains 0.13 Gm. (2 grains) of bismuth subsalicylate-U. S. P., equivalent to 72 mg. of bismuth metal suspended in peanut oil, and 0.03 Gm. (3%) of chlorobutanol.

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SATURDAY, MARCH 14, 1942

BLAST INJURIES

Fulton [1] has recently called attention to the fact that nothing has been done toward investigating blast, although this country has for two years been aware of the bombing of cities and shelling of ships on the high seas. Research on the subject of injuries due to blast is limited to the basic studies of Hooker [2] in this country and to the more recent work of Zuckerman [3] in England. A subsidy from the Committee on Shock of the National Research Council made possible a study to be carried on during 1918-1919 at the Sandy Hook Proving Ground. There Hooker studied the effect on frogs, cats and dogs placed at varying distances from the muzzle of 10 inch and 12 inch guns and also from trinitrotoluene detonations. These studies led him to emphasize four points: The fatal effects of primary blasts occur in animals only relatively near the explosion, a difference of 2 or 3 feet often determining the question of life or death; there is a syndrome of primary shock characterized by collapse of the blood pressure in animals affected but not killed; there is an absence of petechial hemorrhages or other intracranial lesions in the brains of animals exhibiting primary shock; hemorrhagic lesions of the lungs and occasionally of other visceral organs are prevalent in animals subject to blast. The extent of the lung lesion bore little if any relation to the gravity of the symptoms of concussion. Hooker regarded the condition of circulatory collapse following violent air concussion as indistinguishable from the circulatory collapse from primary shock that follows traumatic concussion in civil life.

In his report on experimental investigation carried out for the Research and Experiments Department of the Ministry of Home Security, Zuckerman detailed his studies on mice, rats, guinea pigs, rabbits, cats, monkeys and pigeons. These were exposed to charges of 70 pounds of high explosives and from the explosion of hydrogen and oxygen in balloons. Animals were never killed at distances farther than 18 feet, and none were ever hurt at distances farther than 50 feet from the explosion. Almost all animals were killed between 13 feet and 18 feet, distances at which the positive component of the blast wave varied between 126 and 63 pounds per square inch. In no animal was there any external sign of injury. The principal lesion was bilateral traumatic hemorrhage in both lungs, varying in degree according to the distances of the animals from the charge and the pressure to which the animals were subjected. The lesions of the lung frequently follow the lines of the ribs; when lacerations occur they are in line with the ribs; a site of election of the lesions is those parts which fit into the costomediastinal and costophrenic sinuses. Animals whose bodies were clothed in thick layers of rubber suffered little or no damage. Zuckerman concluded from these experiments that it is the pressure component of the blast wave which bruises the lungs by its impact on the body wall.

In the case of a bomb explosion Zuckerman points out that a man may be wounded by being hit by fragments of bomb casing or by masonry, by being violently thrown or by being affected by the blast wave without being thrown. If a man close to a bomb explosion is fortunate enough to miss a flying missile, he cannot escape being affected by the blast unless he is sheltered close behind some substantial structure from which the wave will be deflected. The clinical reports on primary blast injury emanating from England are scarce and suggest that deaths due to this cause are not common. Dean, Thomas and Allison [4] report a series of 27 cases under treatment for burns and other injuries resulting from the bursting of high explosive bombs at close quarters. They emphasize the frequency of a "blown up" or ballooned appearance of the chest, especially at the lower costal margins, after such injuries. This appearance was often associated with diminished movements of the diaphragm. O'Reilly and Gloyne [5] report 17 cases of blast injury to the lungs without external injury. The main symptoms were grave shock, prostration and restlessness, respiratory difficulty and pain in the chest. The principal physical signs were bulging of the chest wall, congestion and consolidation of the lungs. Bronchopneumonia was a common sequel. In cases which came to necropsy these authors found gross effusion of blood into the mediastinum due to rupture of the capillaries. On gross examination the lungs exhibited patches of intensive congestion resembling early lobar pneumonia. Microscopic examination revealed extensive outpouring of erythrocytes, rupture of elastic tissue and capillaries and secondary infection with streptococci causing bronchopneumonia. Robb-Smith [6] calls attention to the fact that pulmonary symptoms which arise from exposure to the blast of

1. Fulton, J. F.: Blast and Concussion in the Present War, New England J. Med. **226**: 1 (Jan. 1) 1942.
2. Hooker, D. R.: Physiological Effects of Air Concussion, Am. J. Physiol. **67**:219 (Jan.) 1924.
3. Zuckerman, Solly: Experimental Study of Blast Injuries to the Lungs, Lancet **2**: 219 (Aug. 24) 1940.
4. Dean, D. M.; Thomas, A. R., and Allison, R. S.: Effects of High Explosive Blast on the Lungs, Lancet **2**: 224 (Aug. 24) 1940.
5. O'Reilly, J. N., and Gloyne, S. R.: Blast Injury of the Lungs, Lancet **2**: 423 (Oct. 11) 1941.
6. Robb-Smith, A. H. T.: Pulmonary Fat Embolism, Lancet **1**: 135 (Feb. 1) 1941

high explosives may be due to a combination of pulmonary concussion and fat embolism. Of 789 consecutive accident cases reported by him, 125 were fatal; of these 41 presented gross pulmonary fat embolism and in 29 it was thought to have played a major part in causing death. Of the fatal cases, 12 showed no bony injury. O'Reilly and Gloyne did not see any evidence of fat embolism in their cases. Injury to the central nervous system, though limited to minor changes in the brain tissue and occasional areas of subpial hemorrhage, is evidently capable of causing a profound concussion which is quite probably of the same nature as a traumatic concussion.

AMINO ACID METABOLISM IN THE ISCHEMIC KIDNEY

A study of the amino acid metabolism in the isolated ischemic kidney of laboratory animals has led Bing and Zucker [1] of Columbia University to formulate a new theory of the chemical etiology of renal hypertension. Among the numerous metabolic enzymes known to be present in the kidney the Columbia University physiologists emphasize the role of two groups of ferments which transform amino acids into simpler end products. First are a number of specialized catalysts acting directly on amino acids, taking from each its carboxyl group. These decarboxylases thus transform amino acids into corresponding amines. The action of these specialized decarboxylating enzymes is readily demonstrated in aqueous extracts of the renal cortex. The resulting amines may be isolated chemically or titrated by means of their pressor effects on cats. While most amino acids are without appreciable effects on arterial blood pressure, many of the corresponding amines cause arterial hypertension often equal to that produced by equivalent doses of epinephrine.

The essential point in this decarboxylation is the fact that these pressor amines are demonstrable only when enzymic action takes place under anaerobic conditions.[2] In the presence of oxygen the initial pressor amines are apparently destroyed by the subsequent action of a second group of catalysts, reducing them to pharmacologically inert end products.

If one was to assume that in the ischemic kidney the oxygen tension is below that necessary for this terminal destruction or deaminization, local amino acid metabolism would be arrested in such kidneys after the initial decarboxylation. The resulting initial or intermediary pressor amines might well be the dominant factor in producing the observed arterial hypertension.

Bing and Zucker tested this possibility by injecting a typical amino acid, *l*-"dopa" (*l*-diphydroxyphenylalanine) into the kidney parenchymas of cats. In their preliminary tests a clamp was placed about the renal pedicle, completely stopping the kidney circulation. Ringer's solution containing 10 mg. of dopa was then injected through the renal capsule. Two and a half hours later the clamp was removed, restoring the kidney circulation. In all cases this removal was followed within two minutes by a marked rise in arterial blood pressure, the average rise being 68 mm. or mercury, with 115 mm. as the maximum. Previous release of a control clamp on the opposite uninjected kidney had invariably given no appreciable change in arterial blood pressure. Within two and a half hours, therefore, the totally ischemic kidney is able to convert an effective amount of the injected dopa into the corresponding dopa-amine (presumably hydroxytyramine).

In a second series of tests the same dose of amino acid was injected into the parenchymas of kidneys with normal circulation. Except in the few cases in which there was an evident traumatic vasoconstriction, pressor effects were not recorded. With the unimpaired renal circulation, therefore, pressor amines are either not formed or, if formed, are completely destroyed by deaminization.

In a third series of tests the same amino acid dose was injected into a series of 40 kidneys in which the renal circulation had been reduced one half by the application of the Goldblatt [3] clamp. In a typical test of this series the arterial blood pressure rose 75 mg. within sixteen minutes. Intermediary pressor amines, therefore, are formed in effective quantities and are not subsequently destroyed in the 50 per cent ischemic cat kidney.

Finally, perfusion of totally ischemic cat kidneys two and a half hours after dopa injection yielded perfusates whose pressor effects were not destroyed by heating to 100 C. for three minutes or by ultrafiltration (cellophane membrane). These properties differentiate the Holtz[2] ischemic pressor factor from the protein-like renin [4] and ischemin [5] emphasized by previous investigators. By prolonging the total ischemia four to six hours, however, the Columbia physiologists demonstrated the formation or release of such pressor proteins in uninjected kidneys. Evidently the production of pressor amines precedes the formation or liberation of previously emphasized colloidal hypertensins.

The observation of Mason and his collaborators [6] that ammonia production is reduced in the ischemic kidney tends to confirm the suggested theory of arrested aerobic deaminization. Schroeder's [7] demonstration that tyrosinase reduces the hypertension in both animals and man is also confirmatory. Tyrosinase is known to destroy many phenolic compounds resembling the hypothetic initial dopa-amine (hydroxytyramine).

1. Bing, R. J., and Zucker, M. B.: J. Exper. Med. **74**: 235 (Sept.) 1941.
2. Holtz, P., and Heise, R.: Arch. f. exper. Path. u. Pharmakol. **191**: 87, 1939.
3. Goldblatt, Harry; Lunch, J.; Hanzal, R. F., and Summerville, W. W.: J. Exper. Med. **59**: 347 (Sept.) 1934.
4. Page, S. H., and Helmer, O. M.: J. Exper. Med. **71**: 29 (Jan) 1940.
5. Prinzmetal, Myron; Lewis, H. A., and Leo, S. D.: Proc. Soc. Exper. Biol. and Med. **43**: 696 (April) 1940; J. Exper. Med. **72**: 763 (Dec.) 1940.
6. Mason, M. F.; Robinson, C. S., and Blalock, Alfred: J. Exper. Med. **72**: 289 (Sept.) 1940.
7. Schroeder, H. A., and Adams, M. H.: J. Exper. Med. **73**: 531 (April) 1941.

Current Comment

MEDICAL-PHARMACEUTICAL CONFERENCE

By arrangement of the Board of Trustees of the American Medical Association, a joint committee from the American Medical Association met recently with a similar committee from the American Pharmaceutical Association to arrange a medical-pharmaceutical conference in association with a special meeting of the United States Pharmacopeial convention, which is to take place in Cleveland on April 7 to consider the proposed constitution and by-laws. The Medical-Pharmaceutical Conference will be held in the Statler Hotel, Cleveland, April 6, 1942. The program follows:

2 p. m. DEAN TORALD SOLLMANN presiding.

1. Evolution of the Apothecary. E. B. KRUMBHAAR, RALPH MAJOR or HOWARD DIETRICK.
2. Trends of Pharmaceutical Practice. E. F. KELLY.
3. Is the Program of Pharmaceutical Education Justified? ROBERT C. WILSON.

Open discussion limited to two minutes. Each contributor may speak but once.

6:30 p. m. Dinner. DEAN B. V. CHRISTENSEN presiding.

Address: Status of Medicine and Pharmacy in the War and After.

Discussion by representatives of the Army and the Navy.

It is hoped that all those who attend the United States Pharmacopeial convention will be able to come to Cleveland on the day previous so as to participate in this meeting. Unquestionably it is one of great significance for the advancement of professional relationships between medicine and pharmacy.

DR. WEISKOTTEN APPOINTED SECRETARY OF COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

The Board of Trustees of the American Medical Association has appointed Dr. Herman Gates Weiskotten secretary of the Council on Medical Education and Hospitals to succeed the late Dr. William Dick Cutter. Dr. Weiskotten was born in Syracuse, N. Y., in 1884 and graduated from Syracuse University College of Medicine in 1909. Following an internship in the Hospital of the Good Shepherd in Syracuse he was instructor in pathology and bacteriology in his alma mater, 1910-1912, then assistant professor of pathology, 1912-1913, and later associate professor, 1913-1917. Since 1917 he has been professor and head of the department of pathology. From 1922 to 1925 he was acting dean of Syracuse University College of Medicine and since 1925 has been dean and director of the University Hospitals. From 1926 to 1928 he was also commissioner of health of the city of Syracuse. He is a member of the New York State Public Health Council and a member of the American Association of Pathologists and Bacteriologists. A few years ago Dr. Weiskotten collaborated with the late Dr. Cutter in a personal inspection and survey of the medical colleges of the United States and Canada.

OUTLINE OF PROCEDURE FOR PHYSICIANS IN INDUSTRY

Elsewhere in this issue is reproduced a series of recommendations prepared by the Council on Industrial Health and approved by the Judicial Council, intended to help physicians who serve in industry. The outline describes the objectives of industrial health, the functions of physicians in industry and the new relationships which represent the altered professional problems encountered in medical supervision over employed groups. This statement clearly implies that medical service in industry can operate efficiently, ethically and scientifically for the best interests of the worker, the employer, official agencies, the medical profession and the community. The industrial physician has obligations to the medical profession at large; the private practitioner is obligated to recognize professional competence in supervising the care of work forces. Exploitation of the industrial disability of the patient by unnecessarily delaying his return to work is just as reprehensible as the use of industrial influence to enhance individual practice. With this guide a physician in community practice should facilitate expansion of his services to meet the requirements of small and medium sized plants for preventive medicine, surgery and hygiene. In such establishments the application of professional skill and interest is much needed.

MORALE

An excellent project is the development of a series of radio talks on morale by a special subcommittee of the New York Academy of Medicine. This committee, which includes a number of distinguished experts in the fields of public health and psychiatry, points out that it proposes to treat the subject of morale from the constructive, positive, rather than from the negative, aspect. Little emphasis will be placed on fears, anxieties and the destructive aspects of war. Instead, much attention will be devoted to activities in which people may engage in a motor sense, leading to sustaining the emotional equilibrium and developing competence to meet emergencies. Among the specific concepts which will form the basis of the proposed radio talks are the following:

1. Mental casualties result not so much from the threat of bodily harm as from disruption of the normal living processes.
2. The best antidote to panic is to engage the energies of people in communal and gregarious activities.
3. Those who express their anxieties in motor reactions can find release in activities of a social character.
4. Children tend to reflect the anxieties of their parents. The awareness of this by the parents will help them better to protect their children.
5. To children under 6 years of age the home is the center of their emotional life, while, to children under 11, school is the emotional pivot.
6. Food and warmth are all important in sustaining morale.

Significantly the musical theme selected for this series is "Keep the Home Fires Burning." Did the committee give any consideration to the choice of the word "burning" as a subject for thought when bombs are falling?

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession.

PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

The final steps in the printing and mailing of the enrolment form and questionnaire for physicians, dentists and veterinarians, described in the special article on the Procurement and Assignment Service which was published in the February 21 issue of THE JOURNAL, are now being completed. In the meantime the questionnaires originally published in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and in the various state medical journals have served to provide the United States Army and Navy medical departments with additional names of physicians, mostly under 36 years of age, who stated that they were available for immediate service. The continuous development of the Army and Navy medical departments means that additional names will have to become available, in considerable numbers, daily for some months to come. Following the completion of internships for the current year there will become immediately available to both the Army and the Navy medical departments a considerable number, perhaps as many as 60 per cent, of those who are now completing their hospital training. Especially important is the statement from the Army Medical Department that commissions for limited service will be granted to physicians with physical disabilities, who may serve in the zone of the interior. Those who receive such limited service commissions will, of course, be accepted with waivers of disabilities.

Every physician who receives the enrolment form and questionnaire should return it immediately in the franked envelop which will be enclosed. He will have opportunity to indicate a preference for various types of service. Once he has enrolled, he will receive a certificate indicating his enrolment for war service and will be privileged to wear the official button of the Procurement and Assignment Service.

In times like these the demands on rapidly expanding federal agencies are tremendous. The difficulties in securing a sufficient amount of competent stenographers and typists and of needed office material and of space have complicated greatly the problem of maintaining correspondence in the office of the Procurement and Assignment Service. It is hoped that physicians will be patient in awaiting replies to letters discussing their individual problems, realizing that the primary task at the present moment is to maintain for the Army and Navy medical departments adequate lists of men on whom they may call immediately. No doubt, as the work of the office becomes stabilized the promptness of reply to correspondence will be facilitated.

THE NEED FOR TRAINED MEDICAL PERSONNEL TO CARE FOR THE HEALTH OF THE MILITARY

J. R. DARNALL, M.D.
Lieutenant Colonel, M. C., U. S. Army
Washington, D. C.

One of the important tasks of the Army Medical Department is the procurement of all trained medical personnel necessary to care for the health of the military. I propose not to discuss problems of procurement but, rather, to focus attention on Army medical installations which require trained personnel.

Mere mention of the more important fixed military medical establishments and the citation of how additional personnel are utilized with tactical units to furnish field medical service should make it clear that many individuals trained in medicine and allied sciences are vital if the Medical Department's objective is to be attained. This mission is the preservation of the strength of the Army by conservation of military manpower (1) by the selection, through properly conducted physical examinations, of only those men physically fit for military service, (2) by keeping such personnel in good physical condition, through application of modern principles of preventive medicine, and (3) by furnishing those who do become disabled with such aid in the form of evacuation and hospitalization facilities as will speedily restore them to health and fighting efficiency.

To assure maximum coordination and teamwork with all branches of the Army, it is necessary that medical service to the military be rendered by personnel who are a part of the military team and completely under Army control. The various groups of military medical personnel which collectively comprise the Medical Department are under the direction of Major General James C. Magee, the Surgeon General of the Army.

Caring for the health of the military is a far more complex undertaking than meets the eye. It cannot be accomplished by existing civilian medical agencies or by arbitrarily applying principles which have proved most satisfactory in civilian medical organization and practice.

In the armed forces, subordination to military control is of prime importance. At times this may require patient forbearance and suppression of individualistic action. Physicians are apt to find difficulty in adapting themselves to the standardization and regimentation which are designed to accomplish the greatest good for the greatest number, especially if they are unable to visualize the necessity for such adaptation.

Therefore, as I outline the manner in which trained medical personnel are utilized to care for the health of

Read at the National Conference on Medical Service, Chicago, Feb. 15, 1942.

our army, we should bear in mind the foregoing considerations and the restrictions that military necessity will impose.

The Army Medical Department is made up of a number of professional groups as well as a large complement of enlisted personnel and civilian employees. The professional groups include the Medical, Dental, Veterinary, Medical Administrative, Sanitary and Nurse corps All members of these groups hold rank as officers, the nurses being given the "relative" rank of officers. The Medical Department is allocated enlisted personnel for fixed Medical Department establishments in the proportion of 4.85 per cent of the total enlisted strength of the Army. Further allocations of men to the Medical Department for assignment with tactical units vary with the tables of organization and activation of such units. It is safe to estimate that in time of war approximately 7.5 per cent of the total enlisted strength of the Army will belong to the Medical Department. During a major battle, such as the Meuse-Argonne in the first world war, more than 25 per cent of the field force, including patients and medical personnel, may be under direct control of the medical service.

It seems appropriate here to mention briefly the more important Army medical establishments and their functions and to indicate the various types of trained medical personnel which are needed.

MILITARY HOSPITALS

The physician entering military service from civilian life will have to make less of an adjustment to his Army duties if he is assigned to a fixed hospital than if ordered into the field with a tactical unit. But even in the large military hospitals he will encounter unfamiliar administrative procedures.

Army hospitals are classed either as "fixed" or as "mobile." The "fixed" hospitals may be of permanent or temporary construction. They usually remain at the same site for the duration of the war and for an indefinite period thereafter. The "mobile" hospitals are intended primarily for use with field forces in combat zones of theaters of military operations.

Fixed hospitals are classed as either "general" or "station" hospitals. The former vary in size from approximately five hundred to two thousand beds, while the latter vary from twenty-five up to two thousand beds. It is contemplated that general hospitals be maintained to care for about 1 per cent of our total military population, while station hospitals are able to accommodate 4 per cent of the Army. These fixed hospitals are adequately equipped to meet the ordinary requirements of trained medical staffs.

The need for suitably trained medical personnel to operate the Army's fixed hospitals is obvious, and their duties do not differ essentially from the work of similar personnel in civilian hospitals of comparable size. It should be borne in mind, however, that the Army medical officer will deal with a different group of patients than is ordinarily encountered in civilian hospital practice. The illnesses and injuries which the Army doctor is most likely to encounter will occur largely among a class of young men who were physically fit when selected for military service. Therefore infectious diseases will be more prevalent than degenerative maladies, and acute ailments will predominate over chronic disabilities. Furthermore, persons with minor illnesses, who would ordinarily be treated at home in civil life must, in the Army, be hospitalized, as it is impracticable for sick soldiers to remain in barracks.

Military hospitals, with few exceptions, are not provided with interns. The work normally expected of interns must be done by medical officers, who thus are not only afforded an opportunity to study cases in detail but are required to assume full responsibility for their patients.

A one thousand bed Army general hospital, according to proposed tables of organization, requires for its proper functioning a quota of fifty-six officers, one warrant officer, one hundred and five nurses and five hundred enlisted men. The officers include thirty-nine Medical Corps officers (physicians), five Dental officers, seven Medical Administrative Corps officers, two chaplains, two Quartermaster officers and one Sanitary Corps officer. These estimates are considerably lower than the figures contained in previous tables of organization, since the danger of seriously depleting the ranks of civilian medical practice is appreciated and has been given careful consideration.

Among the enlisted men allocated to military hospitals for duty, technicians trained in the following fields are necessary: (1) sanitation, (2) x-ray, (3) pharmacy, (4) laboratory, (5) veterinary, (6) dental, (7) medical and (8) surgical. Anticipating the need for technicians, the Army Medical Department kept pace with the military expansion program for Selective Service training prior to our entry in the war. For many months courses have been conducted at our larger military hospitals and at Carlisle Barracks to train enlisted technicians. These men were coming off of the "assembly lines" at the rate of approximately fifteen hundred a month prior to the Japanese assault on Pearl Harbor.

In addition to enlisted technicians, who must meet the physical standards required for general military service, a number of civilian medical technicians are necessary in our permanent Army hospitals, dispensaries and laboratories.

Thus far I have discussed the need for trained hospital personnel such as are employed ordinarily at large military hospitals. With the numerical requirements of a thousand bed general hospital just cited as an example, it is not difficult to visualize the needs of smaller and of larger "fixed" Army hospitals, which receive allotments of personnel on a scale roughly proportionate to the size of the hospital.

MILITARY DISPENSARIES

Trained medical personnel are also needed to staff our Army dispensaries, which provide outpatient service to military personnel not requiring hospital care. Army dispensaries, like hospitals, are classed as "fixed" or "mobile." Fixed general dispensaries are maintained in some of our larger cities where the size of the military population warrants their establishment. Fixed station dispensaries are provided at many small military stations, where there is no hospital, to provide outpatient service. Station dispensaries are also maintained at very large posts to relieve station hospitals of burdensome outpatient service. On some of the larger military reservations where Army units of considerable size are quartered in scattered areas, decentralized dental clinics, each equipped with fifteen or twenty-five chairs, are set up in populous troop areas, thus obviating many long trips to the station hospital or dispensary. Mobile or

"unit" dispensaries are provided to serve the nonhospital medical needs of troops in the field. In combat these unit dispensaries are known as "aid stations."

OTHER MILITARY ACTIVITIES REQUIRING MEDICAL PERSONNEL

Trained medical personnel are also necessary at the headquarters of the nine corps areas, at the headquarters of our overseas departments and at corps area and department laboratories, as well as in the Office of the Surgeon General of the Army and in the Medical Section of the Office of Chief of Air Corps. They are needed at the Medical Field Service School and at the four Medical Department replacement training centers at Camp Lee, Va., Camp Grant, Ill., Camp Barkeley, Texas, and Camp Robinson, Ark., to train Medical Department enlisted recruits in the medicomilitary aspects of field service. Trained medical men are needed at the Army Medical School, Dental School and Veterinary School. They are needed at the School of Aviation Medicine and at the Aero-Medical Research Laboratory.

The Supply Division of the Surgeon General's Office in Washington, D. C., and the Army medical supply depots which are located in various parts of our country and overseas require officer personnel with a high degree of technical training in medical supply work. It is necessary that many of these officers be selected from among qualified physicians in order that our medical supply problems may be thoroughly understood by the officers charged with the procurement and distribution of this important material. The need for physicians to engage in medical supply work has been adequately met by a special training program for selected officers of the Regular Army Medical Corps, who have been chosen to administer and maintain this service. These "supply trained" medical men form the nucleus of a medical supply organization which also has need for nonmedical specialists in this field.

AVIATION MEDICAL EXAMINERS AND FLIGHT SURGEONS

The Army Air Corps is expanding enormously, so the need for aviation medical examiners and flight surgeons has increased correspondingly. To help meet the requirements, the Army School of Aviation Medicine at Randolph Field, Texas, has been conducting courses to qualify physicians as aviation medical examiners. In normal peacetime these courses lasted four months but, with the need for mass production of pilots incident to military expansion, the courses were shortened to two months. This brief period of time proved inadequate, and the course has been lengthened to three months. At present more than one hundred medical officers are receiving this training every three months. On graduation they are rated as Aviation Medical Examiners and, after a year of satisfactory service as Examiners, they may qualify as Flight Surgeons.

The Army School of Aviation Medicine was born on Jan. 19, 1918, when the Army Central Medical Research Laboratory began functioning at Mineola, Long Island. The first systematic course for flight surgeons, however, was not given until May 1919. The name of the School for Flight Surgeons was changed to the School of Aviation Medicine on Nov. 8, 1922. The first institution of its kind in the world, the Army School of Aviation Medicine has acquired an enviable record in training flight surgeons and aviation medical examiners, not only for the Army, but for the Navy and for a limited number of medical officers from Latin-American governments. The school was moved several times, but since Oct. 30, 1931 it has been located at Randolph Field, Texas. The Navy established a School of Aviation Medicine about two years ago at Pensacola, Fla.

FIELD MEDICAL SERVICE

To the physician in civil life the need for trained medical personnel to care for the health of the military, which I have thus far outlined, must be readily apparent. But, in addition, large numbers of trained medical personnel, including physicians, dentists, nurses and veterinarians, also are required for other important military medical duties, particularly in the field, and the need for them is not so readily appreciated by those who are unfamiliar with the organization and requirements of military service.

In modern civilian communities the health of the population is cared for by hospitals, practicing physicians and dentists, health departments and numerous permanent sanitary installations. To provide properly for the health of the military, the Army Medical Department utilizes its own military hospitals, dispensaries and laboratories. It practices preventive medicine and engages in large scale activities not only to provide service to the sick and injured but to establish and maintain sanitation in the Army.

Military preventive medicine and sanitation present a problem quite different from normal maintenance of civilian health. Satisfactory solution of the problem requires trained medical personnel to take over the responsibilities incident to the increased disease hazards occasioned by military life in cantonments and camps and during military operations in the field. These hazards are enormously increased by unfavorable climatic conditions and by exigencies of military service which may for a while take precedence over preservation of health.

There is a need for medical and sanitary inspectors. In large military organizations work of this nature is a full time job, often requiring several assistants. In the smaller units an officer may serve as medical inspector in addition to other Medical Department duties to which he is assigned. He may have had no previous experience at this work, but any physician with satisfactory basic medical education may become an able inspector.

It should be emphasized that, although "fixed" hospitals must be maintained to provide definite treatment for all military personnel requiring such attention, additional military hospital facilities also must be held in readiness and established when necessary to care for the sick and injured soldiers in the combat zone where "fixed" hospitals are not available.

The provision of mobile evacuation hospitals and surgical hospitals to accompany armies in the field, therefore, requires an additional set of medical personnel to staff these hospitals. Since definitive treatment is usually not practicable in these combat zone "mobile" hospitals, beds must be held available also in "fixed" hospitals in the Communications zone of the theater of military operations and in the zone of interior for casualties evacuated from the mobile hospitals in the combat zone.

The mobile evacuation and surgical hospitals receive sick and wounded from the field army areas in which they are temporarily established and from the division medical installations farther forward. The division casualties are concentrated at clearing stations (formerly called field hospitals) by division collecting companies, which receive patients from regimental and battalion aid stations. All the numerous field medical installations require medical personnel in sufficient numbers to meet the needs of large, small and often widely dispersed tactical units.

When one visualizes the scheme of field medical service, including the chain of evacuation of casualties by the Medical Department from front to rear, and considers the magnitude of this important task of the Medical Department, the need for trained personnel is indeed apparent. Every field unit the size of a battalion or larger must have its complement of medical personnel in sufficient numbers to care for the daily increment of sick and to meet satisfactorily the requirements of at least average battle casualty expectancy. Furthermore, these personnel must be supplemented by additional surgical teams and by replacements when necessary. Experience has shown that medical personnel are by no means immune to illness or to enemy weapons.

NEED FOR ADAPTABLE YOUNG PHYSICIANS

Contrary to the expectations of many professional men who come into military service, the greatest need, numerically, is not for surgeons but for physicians to care for the sick, to conduct countless physical examinations and medical inspections, to supervise sanitation, to give technical advice and to serve in whatever capacity they may be needed, whether or not it is in their special field of training. Sooner or later, as the requirements of the service permit, misplaced round pegs may find their way into round holes, and square pegs, we hope, will be guided into square holes. Qualified surgeons, of course, are needed, including specialists in the various sub-branches of surgery, particularly orthopedists. There is a brisk demand for young neuropsychiatrists, roentgenologists, urologists and physicians trained in laboratory medicine.

In time of war the accent is on youth. There is need for intelligent young medical men who are flexible and adaptable to change. Field medical service calls not only for skill but for stamina and strength. Intervals of comparative idleness will be interrupted by dynamic periods of tremendous activity in which speed, resilience and herculean endurance will be demanded of trained medical personnel serving in the combat zone.

To meet properly the obligation of caring for the health of the military, the Army Medical Department needs the following professional men for every thousand men in the Army: (1) six and five-tenths physicians, (2) one and five-tenths dentists and (3) seventy-five one-hundredths veterinarian.

One hundred and twenty nurses are allocated for every thousand fixed hospital beds, but nurses are not actually assigned to fixed hospitals in that proportion. Nurses for overhead, dispensaries and mobile hospitals must be drawn from this allocation figure.

Officers of the Medical Administrative Corps of the Regular Army are selected from qualified graduates of four year courses in pharmacy. They must pass a satisfactory professional examination prior to commission. Medical Administrative Corps Reserve officers at present are appointed only from among enlisted men who have satisfactorily completed a course of instruction at the Medical Administrative Officers' Candidate School at Carlisle Barracks, Pa.

SPECIALISTS IN ALLIED MEDICAL FIELD COMPRISE SANITARY CORPS

The Army Medical Department also must have specialists who are not doctors of medicine or dentists or veterinary doctors. Included in this group are chemists, bacteriologists, sanitary engineers, food and nutrition experts, nonmedical public health workers and nonprofessional men experienced in the procurement, storage and distribution of medical equipment and supplies. These men may be commissioned as officers, in rank ranging up to colonel, in the Sanitary Corps of the Medical Department.

Sanitary Corps officers are assigned to appropriate duties in their special fields, such as the supervision of water purification and sewage treatment plants, the planning and management of mosquito control programs, sanitary surveys, nutritional studies and liaison with the Quartermaster Corps. Some act as laboratory officers, while some aid in the procurement of medical supplies or serve in other special Medical Department fields.

PROCUREMENT AND ASSIGNMENT SERVICE

The new Procurement and Assignment Service of the Office of Defense Health and Welfare Services, recently organized in Washington, D. C., should prove to be a valuable agency in coordinating an equitable distribution of physicians, dentists and veterinarians to meet the needs of both the civilian population and the armed services. It will be remembered that the American Medical Association rendered invaluable assistance by distributing questionnaires and classifying the physicians of the United States as to their special qualifications and availability. The Association thus laid the groundwork necessary for the proper functioning of the Procurement and Assignment Service.

Army medical service, in time of war, necessarily will function under severe handicaps that are not encountered in civilian medical practice. Nevertheless a high standard of service must be maintained. Therefore it is anticipated that proportionately greater numbers of trained medical personnel will be needed for the Army than would ordinarily be utilized by a numerically equivalent civilian population.

In conclusion, let us take serious cognizance of the will of the American people to achieve decisive victory in this war. Imbued with a determination to win we can be sure that now, as in previous military conflicts, the people of the United States will insist on adequate care for the health of their soldiers. This can be accomplished only by providing trained personnel in sufficient number to meet the heavy demands of our greatly augmented armed forces.

We are justly proud of the magnificent manner in which American medicine is mobilizing for this war. But an enormous task yet lies ahead. This task will require a rising tide of trained medical personnel to care for the health of the military. The physicians and nurses of 1942 are being called on in ever increasing numbers to rally to the colors for active service with the armed forces. They are expected to respond with determination and courage, as did the splendid medical men and women of 1917.

RUBBER MADE AVAILABLE TO SUPPLY MEDICAL NEEDS

Effective March 1, the drastic curtailment of the use of rubber for nondefense purposes was further modified to permit the additional use of rubber in the manufacture of specific articles necessary in medical practice. By amendment 5 to supplementary order M-15-b, as amended, the War Production Board listed the following groups, among others, of articles for the manufacture of which rubber may be used, subject to certain quantitative limitations set forth in the amendatory order:

LIST A—GROUP 28

Acoustic aids
Blood pressure bags
Brain surgery caps
Breast pumps
Colostomy outfits
Dental separating strips and mouth props
Dilators
Evacuators
Finger cots (medical, surgical, dental, veterinary and laboratory)
Inhalation bags and face pieces (medical, surgical, dental and veterinary)
Invalid rings
Irrigators and hard rubber syringes
Medicine droppers
Nipples (feeding)
Operating cushions
Orthodontia bands
Parts for medical, surgical, dental, veterinary and mortuary instruments
Pessaries and prophylactics
Prostatic bags
Rubber bands for artificial limbs
Rubber denture, denture suctions and model formers
Surgeons' gloves (medical, surgical, dental, mortuary and veterinary use)
Surgical tape, medicated footpads and plasters
Tourniquets
Tubes, tubing, including catheters, stopples and rubber policemen (medical, surgical, dental, mortuary, veterinary and laboratory)
Umbilical belts
Urinals—individual wear
Vaccine caps
X-ray sheets, gloves, aprons and cooling hose

LIST A—GROUP 29

Bulbs (medical, surgical, dental, mortuary, veterinary and laboratory)
Water bottles and combination syringes

LIST A—GROUP 30

Dental dam
Fountain syringes
Hard rubber pipe, connections and accessories (medical, surgical, dental, mortuary and veterinary)
Hospital sheeting (hospital, ambulance, mortuary and first aid use only)
Ice bags
Metatarsal cushion or pad (not part of shoe)
Truss pad cover

Similarly, the restrictions on the use of latex were modified to permit the manufacture of the following articles, among others, subject to certain quantitative limitations:

LIST C—GROUP 1

Blood pressure bags
Colostomy outfits
Finger cots (medical, surgical, dental, mortuary and veterinary use)
Inhalation bags and face pieces (medical, surgical, dental, laboratory and veterinary)
Irrigators
Nipples (feeding)
Operating cushions
Pessaries and prophylactics
Prostatic bags
Sinus and cautery bulbs
Surgeons' gloves (medical, surgical, dental, mortuary and veterinary use)
Tubes, tubing, including catheters, medical, surgical, dental, mortuary, veterinary and laboratory use)
Urinals, individual wear
Veterinary sleeves

INTERNS RELIEVED OF AMBULANCE RIDING DUTIES

In an appeal to the public to cooperate in reducing unnecessary ambulance calls, Dr. Willard C. Rappleye, commissioner of hospitals of New York City, announced that interns were relieved, beginning February 16, of their ambulance riding duties in order to conserve their skill for the patients in municipal hospital wards and thus to offset shortages due to military requirements. Ambulance attendants experienced in hospital procedures and thoroughly trained for their new duties are replacing the interns on ambulance service of all municipal hospitals. Although the change is made necessary by the war, the new type of service has long been employed in other large cities with complete satisfaction.

An analysis of ambulance calls in New York for years shows that two hundred and fifty thousand calls a year are from patients for whom no ambulance is required. Patients who thus have been relying on ambulance interns for home medical care must henceforth call their family physicians or attend hospital clinics. In legitimate emergency ambulance cases or in any case of reasonable doubt a person will be taken to a hospital, where a physician will make the diagnosis and prescribe treatment.

In the event of a catastrophe or situation requiring the presence of professional personnel, any one of the eighty-one newly formed disaster units may be dispatched.

HANDBOOK OF FIRST AID

A "Handbook of First Aid" has been issued by the Medical Division of the Office of Civilian Defense in cooperation with the American Red Cross for the use of enrolled civilian defense workers.

The pocket sized handbook has twelve chapters. The book does not replace the standard Red Cross "Textbook of First Aid," which is to be used in first aid classes. Numerous illustrations clarify the procedures. The first aid worker is cautioned against any action that should be left to a physician or any that would handicap the physician when he arrives. The chapter on chemical warfare describes types of war gases and lists briefly under each type the characteristic effects it produces and the appropriate first aid measures. This chapter also includes instruction on care of burns caused by incendiary bombs containing phosphorus.

FIRST AID KITS DISTRIBUTED

Sample emergency medical first aid kits have been distributed by the Medical and Surgical Relief Committee of America to the city and county defense councils of Niagara Falls, Rochester, Binghamton, Schenectady, Nassau, Elmira, Buffalo, Syracuse, Chenango, Westchester, Schoharie, Dunkirk, St. Lawrence, Utica, Albany and Dutchess, N. Y. Each kit is sufficient for demonstration purposes and contains complete supplies for one civilian defense emergency medical team, which is composed of one physician, two graduate nurses and two or more volunteer nurses' aides or first aid workers. At the same time the New York State Council of Defense announces that several chiefs of emergency medical services of civilian defense in New York State have received appropriations from their local defense councils for the purpose of purchasing kits, stretchers and cots.

COURSE ON CIVILIAN DEFENSE AT EDGEWOOD ARSENAL

A special Civilian Defense course was presented at Edgewood Arsenal, Maryland, January 5-10, for U. S. Army and Civilian Defense officers, including a group representing the Medical Division of the Office of Civilian Defense. Drs. Leonard A. Scheele and Harold Marks of the Washington headquarters staff, W. Ross Cameron, Baltimore, regional medical officer of the third Civilian Defense region, and H. Van Zile Hyde, New York, regional medical officer of the second region, were the Civilian Defense medical representatives. Dr. George Baehr, chief medical officer of the Office of Civilian Defense, and Dr. Scheele presented the program of the Medical Division. The subjects taught included aerial attack, aircraft warning, incendiary materials, blackouts, subversive activities, espionage and sabotage, fire equipment, industrial plant and building protection, police training, Federal Bureau of Investigation activities, property accountability, and integration and functions of the Citizens' Defense Corps. Cooperative programs of the American Red Cross, the American Legion and the Boy Scouts of America were outlined by officials of those organizations. The students operated a typical control center. The class members, acting as heads of the various protection services, dispatched the necessary people and equipment to each incident to handle the problem there.

ORGANIZATION SECTION

OFFICIAL NOTES

ABSTRACT OF MINUTES OF MEETINGS OF BOARD OF TRUSTEES HELD FEB. 18-20, 1942

Careful consideration was given to the business of the Association at the annual meeting of the Board of Trustees, which was held in the headquarters office February 18-20, preceded by a full day meeting of the Executive Committee. Many subjects, too numerous to mention in the brief space available here, were considered.

MEETING WITH REPRESENTATIVES OF ASSOCIATION OF AMERICAN MEDICAL COLLEGES AND COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

A conference was held with members of the Executive Council of the Association of American Medical Colleges and members of the Council on Medical Education and Hospitals for a discussion of problems of mutual interest, particularly with a view to avoiding duplication of effort and of conserving the energy of the physician. After considerable discussion a joint committee was appointed to decide on matters of policy and to make recommendations to the Council and to the Association of American Medical Colleges. The committee consists of Dr. Herman G. Weiskotten, Dr. Charles Gordon Heyd and Dr. Reginald Fitz to represent the Council on Medical Education and Hospitals, and Dr. A. C. Bachmeyer, Dr. Fred C. Zapffe and Dr. E. M. MacEwen to represent the Association of American Medical Colleges.

APPROPRIATIONS

Appropriations were made for the conduct of the work of the various departments in the headquarters office and of committees, for necessary conferences and for scientific and therapeutic research.

WAR MEDICINE

Consideration was given to the request that *War Medicine* be published monthly. The final decision will be made after some necessary investigation has been completed.

INVESTMENTS

Careful consideration was given to investing some of the funds of the Association, and authorization was given for the purchase of bonds.

EXTENSION OF SOCIAL SECURITY LAW

Consideration was given to the proposed extension of the Social Security Law, and the Editor was especially authorized to prepare for publication an editorial based on the discussion which the subject elicited.

APPOINTMENTS

The following appointments were made to editorial boards of special journals and to councils and committees (unless otherwise stated, the appointee succeeds himself):

American Journal of Diseases of Children, Dr. C. G. Grulee; and Dr. Alexis Hartmann of St. Louis to succeed Dr. A. Graeme Mitchell (deceased). *Archives of Dermatology and Syphilology,* Dr. Howard Fox. *Archives of Ophthalmology,* Dr. Arnold Knapp. *Archives of Pathology,* Dr. Frank R. Menne. *Archives of Neurology and Psychiatry,* Dr. John Whitehorn. *Archives of Internal Medicine,* Dr. Russell M. Wilder. *Archives of Otolaryngology,* Dr. Ralph A. Fenton. *Archives of Surgery,* Dr. William Darrach. Committee on Scientific Research, Dr. E. W. Goodpasture. Committee for the Protection of Medical Research, Dr. Anton J. Carlson and Dr. G. W. McCoy. Council on Pharmacy and Chemistry, Dr. S. W. Clausen, Dr. E. M. K. Geiling and Dr. W. W. Palmer; Dr. E. K. Marshall Jr. of Baltimore to succeed Dr. Soma Weiss (deceased). Council on Foods and Nutrition, Dr. C. A. Elvehjem and Dr. Philip C. Jeans. Council on Industrial Health, Dr. Warren Draper, Dr. Raymond Hussey, Dr. Henry H. Kessler and Dr. Clarence D. Selby; Dr. William D. Stroud of Philadelphia to succeed Dr. C. W. Roberts (resigned). Council on Physical Therapy, D. A. C. Cipollaro; and Dr. George M. Piersol of Philadelphia and Dr. M. A. Bowie of Bryn Mawr, Pa., to succeed Dr. Harry E. Mock and Dr. Ralph Pemberton.

National Rabies Committee, Dr. Walter A. Bastedo and Dr. John L. Rice, New York.

Policy Forming Committee for the Direction of the Accreditation Program of the National League of Nursing Education, Dr. Herman G. Weiskotten.

Agricultural and Industrial Relations Committee of Eastern, Western and Southern Regional Research Laboratories, Dr. Arthur W. Booth, Elmira, N. Y.; Dr. Robert S. Peers, Oakland, Calif., and Dr. James S. McLester, Birmingham, Ala.

Joint Committee on Health Problems in Education of National Education Association and American Medical Association, Dr. W. W. Bauer to succeed himself for a five year term.

COMMITTEE APPOINTED TO PREPARE MEMORIAL RESOLUTIONS IN HONOR OF DR. WILLIAM D. CUTTER

A committee of three was appointed to prepare memorial resolutions conveying the sentiment of the Board regarding their departed colleague Dr. William D. Cutter, a copy of which is to be sent to his widow.

DR. ROSCO G. LELAND APPOINTED MEMBER OF HEALTH AND MEDICAL COMMITTEE

The Board approved the appointment of Dr. Rosco G. Leland, Director of the Bureau of Medical Economics, as a member of the Health and Medical Committee of the Selective Service System, which committee is to advise the Division of Research and Statistics in matters pertaining to the statistical analysis of reports of physical examination and other individual records prepared for registrants under the jurisdiction of the Selective Training and Service Act of 1940, as amended.

DR. A. E. SMITH APPOINTED ACTING SECRETARY OF COUNCIL ON PHARMACY AND CHEMISTRY

The Board approved the appointment of Dr. A. E. Smith, who has been a member of the staff of the Council on Pharmacy and Chemistry, as Acting Secretary of that council on the resignation of Dr. T. G. Klumpp.

SUCCESSOR TO DR. WILLIAM D. CUTTER

The Board approved the recommendation of the Council on Medical Education and Hospitals that Dr. Herman G. Weiskotten be selected to succeed Dr. William D. Cutter as Secretary of the Council on Medical Education and Hospitals.

GRADUATE STUDENTS TO OBSERVE WORK OF HEALTH EDUCATION IN ASSOCIATION HEADQUARTERS

The Board authorized the extending of permission to graduate students, including physicians and teachers—one or two at a time—to spend one or two weeks in the office of the American Medical Association to observe the work of the Bureau of Health Education and to become acquainted with the functions of other bureaus which touch on the work of health education.

DIRECTOR OF BUREAU OF LEGAL MEDICINE AND LEGISLATION

The Board designated Mr. J. W. Holloway Jr., who has been "Acting Director" of the Bureau of Legal Medicine and Legislation since the retirement of Dr. W. C. Woodward, Director of that bureau.

COOPERATION WITH UNITED STATES OFFICE OF EDUCATION IN FURNISHING MATERIAL FOR PACKETS FOR CONSUMER EDUCATION

Authorization was given to the headquarters staff to cooperate with the United States Office of Education by furnishing pamphlets and other material considered useful to the Information Exchange on Education in Wartime of the United States Office of Education. This material will be included in the packets which it is assembling on the consumer in war time with a view to making the most recent and pertinent material available to a wide range of readers.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Changes in Health Officers.—Dr. Thomas M. Littlepage, Mount Sterling, has been appointed health officer of Choctaw County.——Dr. Ernest A. Cook, Wedowee, has been appointed health officer for Cleburne County, succeeding Dr. Corinne S. Eddy, Centerville, resigned.——Dr. Charles Jack Fisher, Montgomery, has been appointed health officer of Tuscaloosa County succeeding Dr. Arthur A. Kirk, who resigned after many years of service. The change is effective on April 1. Dr. Fisher who is now in charge of the venereal disease program of the state department of health, formerly served as health officer of Butler County.

CALIFORNIA

Personal.—Dr. Oswald N. Andersen was chosen president-elect of the Santa Clara County Tuberculosis Association in San Jose, January 23. Dr. Andersen is director of the School of Health of Stanford University at Stanford University; he formerly served on the staff of the Council on Medical Education and Hospitals of the American Medical Association.

Dr. Seeley Mudd Named Dean at University of Southern California.—Dr. Seeley G. Mudd, Pasadena and Los Angeles, has been appointed dean of the University of Southern California School of Medicine, Los Angeles. He succeeds the late Paul B. McKibben, Ph.D. Dr. Mudd graduated at Harvard Medical School, Boston, in 1924. He is a member of the California Institute Associates, a nonprofit organization to promote the interests of the California Institute of Technology.

Annual Lecture Course.—The ninth annual lecture course of the San Jose Hospital Association will be presented at the San Jose Medico-Dental Building Auditorium on the early clinical diagnosis of neoplastic diseases. Dr. William Carpenter MacCarty, professor of pathology, University of Minnesota Graduate School, Minneapolis-Rochester, will be the speaker. His subjects will be:

March 23, Our General Knowledge of Neoplastic Diseases.
March 24, Gastrointestinal Tract.
March 25, Breast, Uterus and Ovaries.
March 26, Kidney, Bladder and Testicle.
March 27, Bones, Soft Tissues, Lymph Nodes and Ductless Glands.

Plague Infection in Fleas.—According to *Public Health Reports*, plague infection has been proved by animal inoculation and by cultures in fleas from ground squirrels Citellus douglasi as follows: in a pool of 31 fleas from 2 ground squirrels, and in another pool of 18 fleas from 1 ground squirrel, submitted to the laboratory on October 24 from locations 26 and 28 miles north of Redding, Shasta County; in a pool of 27 fleas from 2 ground squirrels submitted on October 21 from property 3½ miles north and ½ mile west of Mount Shasta City, and in a pool of 91 fleas from 4 ground squirrels submitted on October 22 from a ranch about 2 miles northeast of Edgewood, both locations in Siskiyou County.

CONNECTICUT

Dr. Braun-Menendez Speaks at Yale.—Dr. Eduardo Braun-Menendez, director of cardiovascular investigations and lecturer in physiology, Faculty of Medical Sciences, University of Buenos Aires, Buenos Aires, Argentina, addressed a special meeting of the Yale Medical Society in the Brady Memorial Laboratory, New Haven, February 25, on "Humoral Mechanism of Renal Experimental Hypertension."

DELAWARE

Society News.—Dr. Lester Neuman, Washington, D. C., addressed the New Castle County Medical Society in Wilmington, January 20, on "New Horizons in Clinical Pathology." Dr. Robert E. Moran, Washington, D. C., discussed "Indications for Various Grafts" before the society recently.

Health Association Organized.—At a recent meeting in Wilmington the Delaware Public Health Association was organized with the following officers: Dr. Edwin Cameron, Dover, president; Dr. George H. Gehrman, Wilmington, and Mrs. Anna Van W. Castle, R.N., Wilmington, vice presidents; G. Taggart Evans, Wilmington, secretary, and Dr. Roger Murray, Wilmington, treasurer.

GEORGIA

New Professor of Neurology.—Dr. Wilford Arless Risteen, Rochester, N. Y., has been appointed professor and head of the department of neurologic surgery at the University of Georgia School of Medicine, Augusta, succeeding the late Dr. Richard Frank Slaughter. Dr. Risteen graduated at the University of Wisconsin Medical School, Madison, in 1930.

Changes in Health Officers.—Dr. Wilbur D. Lundquist, Waynesboro, health commissioner of Burke County, will during the present year devote half of his time to Jenkins County, which has been without a health officer since Dr. Isbin S. Giddens, Millen, resigned to enter the army.——Dr. Anthony Ralph Marsicano, formerly of Coolidge, has been named health commissioner of Coffee County.

ILLINOIS

Warning Against Coal Tar Drugs.—The state department of health has issued a warning against the unsupervised and indiscriminate use of such coal tar drugs as sulfanilamide, sulfapyridine and sulfathiazole. The warning followed a recent death in Chicago, which was ascribed to the patient's taking an overdose of sulfathiazole without medical supervision. The patient, who was taking sulfathiazole for gonorrhea without an attending physician, finally entered the hospital with a severe sore throat, a high temperature, an abnormally low white blood cell count, and he died nine hours later.

Dr. Adair Named Chief of Maternal and Child Hygiene.—Dr. Fred L. Adair, Mary Campau Ryerson professor of obstetrics and gynecology and chairman of the department, University of Chicago, The School of Medicine, Chicago, has been appointed chief of the state division of maternal and child hygiene, effective March 1. Dr. Adair graduated at Rush Medical College, University of Chicago, in 1901. He has held many important positions concerned with his specialty. In 1930 he was chairman of the Committee on Prenatal and Maternal Care of the White House Conference on Child Health and Protection. From 1928 to 1931 he was secretary of the Section on Obstetrics, Gynecology and Abdominal Surgery of the American Medical Association, serving as chairman from 1931 to 1932. Currently he is general chairman of the American Committee on Maternal Welfare, Inc.

Chicago

Personal.—Dr. Arno B. Luckhardt, professor and chairman of the department of physiology, University of Chicago, The School of Medicine, was elected an honorary member of the St. Louis Medical Society, Dec. 10, 1941.

Branch Meetings.—The North Shore Branch of the Chicago Medical Society was addressed, March 3, by Dr. Geza de Takats on "Treatment of Thrombosis and Embolism."——Drs. David E. W. Wenstrand, Milwaukee, and Arthur C. Christie, Washington, D. C., will address the Northwest Branch of the Chicago Medical Society, March 20. Their subjects will be "The Prevalence of Cancer Today" and "What is Being Done to Control Cancer" respectively.

Society News.—The Chicago Orthopaedic Society was addressed, February 13, by Dr. Guy A. Caldwell, New Orleans, on "The Time Factor as Relates to Local Implantation of Sulfathiazole in Compound Fractures" and Dr. Walter P. Blount, Milwaukee, "Internal Fixation in High Femoral Osteotomies."——At a meeting of the Chicago Society of Internal Medicine, February 23, Drs. Clayton J. Lundy and Myron W. Larson, Aurora, Ill., spoke on "Clinical Evaluation of Heart Sound Records in Rheumatic Heart Disease.——Dr. Paul H. Holinger will address the Chicago Tuberculosis Society, March 19, at the Bismarck Hotel on "The Larynx, Tracheobronchial Tree and Esophagus in Kodachrome: Color Motion Pictures Taken Through the Laryngoscope, Bronchoscope and Esophagoscope." Dr. Loren L. Collins, Ottawa, will discuss a "Case Finding Program in La Salle and De Kalb Counties."

Society Cooperates in Manning Casualty Stations.—The Chicago Medical Society and its branch societies are contributing their services as physicians in charge of the casualty stations and first aid posts being established by emergency medical services of the Chicago Metropolitan Civilian Defense Area to serve during catastrophes. At a meeting on March 1 the group received its initial instructions. Speakers included

Drs. Herman N. Bundesen, chief of emergency medical services in this area; H. Prather Saunders, chairman of the coordinator's medical advisory council committee on physicians, and Loyal Davis, chairman of the council committee on first aid posts and casualty stations. Up to March 1, 376 casualty stations had been designated in the local civilian defense area. These are the stations from which first aid teams will go forward to first aid stations at the actual scene of a catastrophe and through which victims will be cleared to hospitals when they require more than first aid treatment.

Neuropsychiatric Meeting.—The Central Neuropsychiatric Hospital Association will meet at the Medinah Club, March 19-20, under the presidency of Dr. Russell C. Doolittle, Des Moines, Iowa. The speakers include:

Dr. Roy R. Grinker, What the Referring Physician Expects of the Private Psychiatric Hospital.
Dr. George T. Harding, Columbus, Ohio, Acute Problems Facing the Private Psychiatric Hospital.
Dr. Titus H. Harris, Galveston, Texas, Psychiatry and the National Emergency.
Dr. Henry D. Allen Jr., Milledgeville, Ga., Community and Public Responsibility of the Private Psychiatric Hospital.
Dr. Lloyd H. Ziegler, Wauwatosa, Wis., Advertising Methods of the Psychiatric Institution.
Dr. James C. Hassall, Oconomowoc, Wis., Recommendations for Standardization of Private Psychiatric Institutions.
Dr. George S. Sprague, White Plains, N. Y., Treatment Methods in a Psychiatric Institution.
T. V. McDavitt, LL.D., Chicago, Legislation and the Private Psychiatric Hospital.
Dr. William C. Menninger, Topeka, Kan., Morale and the Private Psychiatric Hospital.

The evening meeting on Thursday will be a joint session with the Chicago Neurological Society.

INDIANA

County Society Secretary for Sixty-Three Years.—Dr. Wilson T. Lawson, Danville, was honored at the annual conference of state secretaries of the Indiana State Medical Association in Indianapolis recently in recognition of his sixty-three years' service as secretary of the Hendricks County Medical Society. Dr. Lawson is said to be the oldest secretary of a medical society in Indiana in both length of service and years of age. He is 92 years old. He also serves as health officer of the county. Dr. Lawson graduated at Miami Medical College, Cincinnati, in 1878.

Changes in Health Personnel.—The state medical journal reports that the following physicians have been named health officers of the counties indicated:

Dr. Jesse E. Nixon, Portland, Jay County.
Dr. James H. Crowder, II, Sullivan, Sullivan County.
Dr. George R. Douglas, Valparaiso, Porter County.
Dr. Elton R. Clarke, Kokomo, Howard County.
Dr. James E. Keeling, Waldron, Shelby County.
Dr. John S. Gilkison, Shoals, Martin County.
Dr. Charles F. Pectol, Spencer, Owen County.
Dr. Harold B. Turner, Bloomfield, of Greene County.

The following have been reappointed health officers of their counties: Dr. Orville A. DeLong, Elizabethtown, of Bartholomew County; Ira E. Perry, North Manchester, of Wabash County; Charles W. Atkinson, Boswell, Benton County; Oscar S. Heller, Greenfield, Hancock County, and Fred W. Grayston, Huntington, of Huntington County.——Dr. James R. Hamilton, Mitchell, has been appointed city health officer to succeed the late Dr. James D. Byrns.

KANSAS

Society News.—Dr. Florian E. Schmidt, Chicago, discussed "Management and Treatment of Pneumonia" before the Sedgwick County Medical Society in Wichita, February 17.——Dr. Maxwell Gitelson, Chicago, addressed the Topeka Psychoanalytic Society, January 31, among others, on "Intellectuality and the Defense Transference." Dr. Gitelson addressed the Shawnee County Mental Hygiene Society, January 30, on "The Child Guidance Clinic."

Changes in Psychiatric Training Program.—The Menninger Clinic of Topeka recently announced changes in its psychiatric training program in order to comply with the requirements of the American Board of Neurology and Psychiatry for a three year training period of a specific nature. Instead of one year residencies a three year training program has been inaugurated, the first year is to be known as a residency, the second a fellowship and the third as an assistantship. Assistants will be eligible to election to associate staff membership in the Menninger Clinic on completion of their training.

MARYLAND

Association of Medical Health Laboratories.—The Maryland Association of Medical and Public Health Laboratories held its midwinter meeting in Baltimore, February 11. The speakers included Captain Roger J. Reid, Fort George G. Meade, "Organization of Laboratory Work in the Army"; Dr. Caroline A. Chandler, instructor in preventive medicine, Johns Hopkins University School of Medicine, Baltimore, "Laboratory Procedures for the Isolation and Identification of Beta Hemolytic Streptococci"; John H. Brewer, Ph.D., Baltimore, bacteriologist, I. J. Carski, A.B., manager, Baltimore Biological Laboratory, and Mrs. Rebecca Govons, M.A., associate bacteriologist, state department of health, Baltimore, "Bacteriological Culture Media," and Miss Anna Ryan, A.B., chemist, Harriet Lane Home, Johns Hopkins Hospital, Baltimore, "Micromethods for the Chemical Analysis of Blood."

MASSACHUSETTS

Tufts Alumni Meeting.—The Tufts Medical Alumni Association will hold its annual meeting and dinner at the Hotel Somerset, Boston, March 25, with Dr. James W. Manary, superintendent and medical director of the Boston City Hospital, presiding. The chief speaker will be Dr. Frank H. Lahey, Boston, President of the American Medical Association, whose subject will be "The Doctor's Place Today." Other speakers will include Leonard Carmichael, Ph.D., president of Tufts College, Medford; Dr. Frank R. Ober, Boston, president of the state medical society, and Dr. Alonzo K. Paine, professor of obstetrics at Tufts. A report of twenty-five years of the class of 1917 will be presented by Dr. Roy J. Heffernan, Boston. Dr. Priscilla White, Boston, will speak on "The Woman Physician."

MICHIGAN

Ninetieth Birthday of Dr. Kellogg.—Dr. John Harvey Kellogg, associated with the Battle Creek Sanitarium as surgeon and superintendent since 1876, was guest of honor at a dinner in the sanitarium, February 26, given by the local chamber of commerce and the Calhoun County Medical Society to mark his ninetieth birthday. He was presented with a specially inscribed scroll. Dr. Kellogg was born in Tyrone, Mich., Feb. 26, 1852. He graduated at Bellevue Hospital Medical College, New York, in 1875. He was a member of the state health board from 1878 to 1890 and from 1912 to 1916. He was founder of the health food industries of Battle Creek and founder and president emeritus of Battle Creek College and the Race Betterment Foundation, serving as its president. He has written numerous articles concerned with diet and health.

MINNESOTA

Society News.—The Minnesota Pathological Society was addressed in Minneapolis, February 17, by Drs. Owen H. Wangensteen on "Genesis of Gastric and Duodenal Ulcer with Experimental and Clinical Studies" and Robert Hebbel on "Pathologic Changes in the Gastric Mucosis in Association with Gastric and Duodenal Ulcer." Both are from Minneapolis.——Dr. Archibald E. Cardle presented a thesis on "The Pituitary Gland and Diabetes Mellitus" at the Minnesota Academy of Medicine meeting, St. Paul, February 11, and Dr. Walter E. Camp presented a case report on "Malignant Exophthalmos"; both are from Minneapolis.

Special Lectures.—Dr. William D. Stovall, Madison, Wis., director of the state laboratory of hygiene and professor of hygiene, University of Wisconsin Medical School, Madison, lectured at a dinner meeting of the Minnesota Society for the Control of Cancer on February 24. His subject was "Cancer, Its Prevention and Control." Drs. Maurice B. Visscher and Owen H. Wangensteen presented a program on shock before the Hennepin County Medical Society on March 2. Dr. Visscher discussed the theories underlying the causes and mechanism of shock, and Dr. Wangensteen their practical application.

NEBRASKA

New Director of Local Health Service.—Dr. Wallace S. Petty, formerly head of the Sioux City and Woodbury County (Iowa) health units, has been appointed director of local public health service for the state department of health, Lincoln. Dr. Petty recently completed a course in public health at the University of Minnesota, Minneapolis.

Public Health Forum.—The Omaha health department presented the second in a series of public health forums for the citizens of Omaha on February 9. The theme was "Venereal Disease Control in War." Dr. Charles McMartin, professor of dermatology and urology, Creighton University School of Medicine, Omaha, was chairman of the panel.

NEVADA

Alleged Abortionist Located.—Valentine St. John, a fugitive from justice in the state on charges of abortion, has been located in Canada and attempts are being made to extradite him to Reno for trial, according to information from the office of the district attorney in Washoe County, January 30. In a criminal complaint filed on Nov. 20, 1940 in the Washoe County district court St. John was one of a group of six persons charged with having committed an abortion. R. L. Rankin and Paul Cushing, two of those named, who were sentenced to terms of from one to five years in the Nevada State Penitentiary, Carson City, are now confined there. The names of St. John, Rankin and Cushing appeared in a criminal complaint which was issued in connection with the so-called Pacific Coast abortion ring in 1936. As a result of the investigation all three were sentenced to terms in San Quentin. St. John successfully appealed his conviction and sentence.

NEW YORK

Annual Spring Clinical Day.—The University of Buffalo School of Medicine Medical Alumni Association will hold its eighth annual spring clinical day on March 28 at the Hotel Statler, Buffalo. The speakers will be Drs. Philip S. Hench, Rochester, Minn.; Carl E. Badgley, Ann Arbor, Mich.; Maxwell M. Wintrobe, Baltimore; Harold T. Hyman, New York, and Frank H. Lahey, Boston, President of the American Medical Association.

Graduate Course.—The Medical Society of the State of New York is sponsoring a postgraduate course in arteriosclerosis and aging, arranged by Dr. John Murray Steele, New York, for the Jefferson County Medical Society. The lectures will be given at the Black River Valley Club, Watertown, by the following New York physicians:

Dr. Steele, Clinical Interpretation of Modern Physiological Concepts, April 9.
Dr. Sigmund L. Wilens, Pathological Aspects, April 16.
Dr. S. Bernard Wortis, Neuropsychiatric Aspects; Diagnosis and Treatment, April 23.
Dr. William Goldring, Renal and Cardiac Aspects; Diagnosis and Treatment, May 14.
Dr. Irving S. Wright, Peripheral Vascular Aspects; Diagnosis and Treatment, May 21.

Decrease in Suicides.—The state department of health, in a report for 1941, announces a decrease in suicides, which may be taken as an "indication of the greater sense of individual security and the better moral tone of the people." There were one thousand eight hundred and forty-four suicides in 1941, four hundred less than in 1940, and nine hundred less than in 1932, when an all time high of 21.2 was recorded. According to *Health News* the financial panic was undoubtedly the main, if not the only, reason for the 20 per cent increase in suicides in the state in 1908, while the 1932 total reflected the cumulative weight of the last depression. The death rate for the state per thousand of population was 10.9, the birth rate per thousand of population 15.5, the infant mortality thirty-three deaths under 1 year per thousand live births, and the maternal mortality rate 22 per 10,000 live and still births. New low rates for the state were established for the mortality from typhoid, scarlet fever, whooping cough, diphtheria, diarrhea under 2 years, tuberculosis, appendicitis, hernia and accidents, excepting automobile fatalities. The rate for this last group was 19.4, or 7 per cent above the 1940 figure.

New York City

Lectures to the Public.—A series of lectures to the public is now being given at the New York Academy of Medicine. Included among the lecturers is Dr. Arnold L. Gesell, director of the Clinic of Child Development, Yale University School of Medicine, New Haven, on "Creative Behavior in Child and Adult."

Dr. McLester to Give Biggs Memorial Lecture.—Dr. James S. McLester, Birmingham, professor of medicine, University of Alabama School of Medicine, and formerly President of the American Medical Association, will deliver the Hermann M. Biggs Memorial Lecture at the New York Academy of Medicine, April 2. His subject will be "Nutrition and the Nation at War."

Sixth Harvey Lecture.—Dr. Albert R. Behnke Jr., lieutenant commander, medical corps, U. S. Navy, instructor in charge of department of atmospheric hygiene, U. S. Navy Yard, Washington, D. C., will deliver the sixth Harvey Society Lecture of the current series at the New York Academy of Medicine, March 19. His subject will be "Physiologic Studies Pertaining to Aviation Medicine and Deep Sea Diving."

Friday Afternoon Lectures.—Lectures in the sixteenth series of Friday afternoon lectures at the New York Academy of Medicine include Drs. Rupert Franklin Carter, February 27, on "Modern Methods of Diagnosis in Disorders of the Gallbladder"; Thomas H. Russell, March 6, "Indications for Surgery and the Surgical Treatment of Diseases of the Gallbladder," and George F. Cahill, March 13, "Recent Advances in Certain Renal Surgical Problems."

Symposium on Diabetes.—The New York Diabetes Association, Inc., will devote a clinical meeting at the New York Academy of Medicine, March 26, to a symposium on "Reduction in Mortality Due to Gangrene in the Diabetic." The speakers will be Drs. Frederick W. Williams, By Prevention; Samuel Standard, By Use of Sulfonamide Drugs; Lyman W. Crossman, By Use of Cold as an Anesthetic Agent for Amputations, and Beverly C. Smith, By Amputations Below the Knee.

Inter-American Bureau of Academy of Medicine.—The New York Academy of Medicine has organized an Inter-American Division with the objective of cultivating friendship, understanding and sympathy with the medical men in other countries of the Americas. The bureau of clinical information of the academy has made provisions to welcome medical visitors from the American countries and to extend to them its facilities for the pursuit of knowledge. A Spanish physician who can converse in Spanish, Portuguese and English will be available to these visitors. The bureau also publishes a daily bulletin of clinics, meetings, lectures, conferences, hospital rounds and other medical activities, according to *Science*.

NORTH CAROLINA

Society News.—Dr. Maurice Barnes Woodhall, Durham, discussed "Diagnosis and Treatment of Sciatica" before the Halifax County Medical Society recently in Roanoke Rapids. ——A recent meeting of the Forsyth County Medical Society was addressed in Winston-Salem by Dr. Robert L. McMillan, Winston-Salem, on "Typhus Fever and the So-Called Q Fever." ——The North Carolina Obstetrical and Gynecological Society was recently addressed in Charlotte, among others, by Dr. Otis Hunter Jones, Charlotte, on "X-Ray Studies of the Pelvis and Fetal Pelvic Relationship."

Vital Statistics.—The North Carolina State Department of Health announced recently that only 53 deaths from puerperal septicemia were recorded in 1941 as compared with 112 in 1940, a noticeable decline. The 1941 birth rate was 23.6, as compared with 22.7 the previous year. The death rate dropped from 9.0 to 8.9, the lowest recorded in the state. The number of deaths among babies a year old was 5,073, as compared with 4,676 the preceding year, giving a rate of 59.4 per thousand live births. There were 354 maternal deaths in 1941 as against 438 in 1940, giving a rate of 4.1. Deaths from diphtheria during the year dropped from 119 to 89. This change reflects the compulsory immunization law passed by the 1939 legislature, according to the state board of health.

OHIO

Changes in Child Hygiene Personnel.—Dr. Arthur W. Thomas, Columbus, chief of the division of child hygiene, Ohio State Department of Health, has been appointed chief of the subdivision of child hygiene in the Cleveland Department of Health, effective February 1. Dr. Thomas succeeds Dr. Rudolph J. Ochsner, Cleveland, who has retired after thirty years' service.

Selman Memorial Lectures.—The fourth annual Julius J. Selman Memorial Lectures were given at Mount Sinai Hospital, Cleveland, February 9-10, by Dr. Otto Loewi, research professor of pharmacology, New York University, New York. His subjects were "The Chemical Transmissions of Nervous Impulse" and "Regulation and Adaptation of the Organism." The lectures were established as a memorial in 1938 to the late Dr. Selman.

First Annual Institute on Epilepsy.—The Auracraft Shop of the Association for the Crippled and Disabled held its first annual Institute on Epilepsy at the Cleveland Health Museum, February 26. The program opened with a historical survey by Dr. Joseph L. Fetterman, Cleveland. Other speakers were Dr. Alexander T. Bunts, Dr. John H. Nichols and Miss Bell Greve, executive secretary of the association. There were exhibits on the roentgenologic and electroencephalogic aspects of epilepsy.

Society News.—The Academy of Medicine of Cincinnati was addressed, February 17, by Drs. John G. Mateer, Detroit, on "Comparative Sensitivity and Reliability of the Newer Liver Function Tests and Their Relationship to Medical and Surgical Problems" and Lawrence S. Fallis, Detroit, "Gastric Surgery."——Dr. Julius M. Rogoff, Pittsburgh, discussed "The Adrenal Glands in Relation to Hypertension and Diabetes" before the Mahoning County Medical Society, February 17. ——Dr. John S. Lockwood, Philadelphia, discussed the sulfonamides before the Summit County Medical Society, February 3.

OREGON

Society News.—Dr. Curle Latimer Callander, San Francisco, presented two graduate lectures before the Portland Academy of Medicine at the University of Oregon Medical School, Portland, February 5-6, on "A New Tendoplastic Amputation Through the Femur at the Knee" and "The Story of the Peritoneum with Its Clinical Applications."—— The Multnomah County Medical Society was addressed, January 7, in Portland by Drs. John A. Gius, Portland, on "Theodore Billroth, the Father of Visceral Surgery"; Goodrich C. Schauffler, Portland, "Pediatric Gynecology," and Albert W. Holman, Portland, "Hydatid Mole and Chorioepithelioma."

Sommer Memorial Lectures.—The second series of Sommer Memorial Lectures will be given at the University of Oregon Medical School, Portland, March 23-25, under the auspices of the University of Oregon Alumni Association. Dr. George W. Holmes, clinical professor of roentgenology, Harvard Medical School, Boston, will be a guest speaker for the alumni association and discuss "Irradiation in the Treatment of Malignant Tumors," "Roentgen Diagnosis of Obstructive Bronchial Lesions" and "Recent Advances in the Roentgen Diagnosis of Lesions of the Gastrointestinal Tract." Dr. Harvey B. Stone, associate professor of surgery, Johns Hopkins University School of Medicine, Baltimore, will present "Surgical Treatment of Biliary Diseases," "Intestinal Obstruction" and "Surgery of the Colon."

PENNSYLVANIA

Society News.—Dr. Nicholson J. Eastman, Baltimore, will address the Harrisburg Academy of Medicine, March 17, on "Obstetrical Hemorrhage."—— Dr. Joseph H. Barach, Pittsburgh, addressed the Indiana County Medical Society, Indiana, February 12, on "Treatment of the Complications of Diabetes."

Philadelphia

Outbreak of Scarlet Fever.—An epidemic of scarlet fever has been indicated in the city according to the newspapers, February 21. There were 170 cases of the disease reported in the week ended February 20 as compared with 142 new cases in the preceding week.

VIRGINIA

Annual Graduate Course in Diseases of the Eye, Ear and Throat.—The sixteenth annual spring graduate course of the Gill Memorial Eye, Ear and Throat Hospital will be held in Roanoke, April 6-11. The guest lecturers will include:

Dr. George E. Shambaugh Jr., Chicago, Treatment of Acute Middle Ear Conditions.
Dr. George M. Coates, Philadelphia, The Nose and Throat as a Focus of General Infection.
Dr. Warren B. Davis, Philadelphia, The Management of Fractures of the Facial Bones Extending into the Nasal Accessory Sinuses and the Management of Recent Fractures of the Nose.
Dr. John F. Erdmann, New York, Ludwig's Angina.
Dr. John R. Richardson, Boston, Applied Anatomy of the Head and Neck and Anatomy of Ethmoid Sinuses.
Dr. William E. Grove, Milwaukee, Diagnosis and Treatment of Acute Sinusitis and Osteomyelitis.
Dr. Norton Canfield, New Haven, Conn., Fundamentals of Sound With a View of the Physical Principals Involved in Sound Perception.
Dr. Edwin N. Broyles, Baltimore, Papilloma of the Larynx in Children and Carcinoma of the Larynx.
Dr. William Gayle Crutchfield, Richmond, Va., Intracranial Complications Arising from Infection of the Ear and Sinuses.
Dr. Edwin B. Dunphy, Boston, Ophthalmic Therapeutics.
Dr. Earl L. Burky, Baltimore, The Clinical Use of Staphylococcus Toxin and Antitoxin and Differential Diagnosis and Therapy of Ocular Infection.
Dr. Harvey E. Thorpe, Pittsburgh, Methods of Examination and the Cornea; Illustrated Lectures on Slit Lamp Microscopy.
Dr. Bennett Y. Alvis, St. Louis, Headache as a Problem for the Ophthalmologist.
Dr. Wendell L. Hughes, Hempstead, N. Y., Series of Lectures Covering Extraocular Muscles and Clinical Demonstration Showing Methods of Measuring Muscle Imbalance.
Dr. Edmund B. Spaeth, Philadelphia, Indications for Cataract Surgery.
Dr. Richard Townley Paton, New York, Intraocular Tumors and Their Clinical Diagnosis.
Dr. Plinio H. Montalvan, New York, Refraction: Routine Procedures.

GENERAL

Fund for Cardiologic Research.—A special fund has been placed in the charge of the Committee on Scientific Research of the American Medical Association to support cardiologic research by young physicians in medical practice. Inquiries may be addressed to the committee, 535 North Dearborn Street, Chicago.

Interned Germans Are Ill from Trichinosis.—The entire interned crew of four hundred of the German ship *Columbus* were ill of trichinosis at Fort Stanton, N. M., newspapers reported, February 17. The report stated that the German crew was interned while the United States was a neutral, and the German government paid for its subsistence prior to the declaration of war. Under those conditions the German captain inspected the packing plant which supplied meat for the camp and contracted for delivery of the pork which the interned crew members ground and made into sausage, it was said. The U. S. Department of Agriculture is investigating the plant which supplied the meat, according to the report.

Treatment of Insane Persons in U. S. Narcotic Hospitals.—By executive order, February 26, the President authorized the Federal Security Administrator to admit, to the extent that he may deem advisable, insane persons, except those from the District of Columbia, to the U. S. Public Health Service hospitals at Lexington, Ky., and Fort Worth, Texas, for care and treatment on the same terms and conditions as such persons may be entitled to admission to St. Elizabeths Hospital, at Washington, D. C. The administrator was also authorized to transfer insane persons from St. Elizabeths Hospital to such Public Health Service hospitals. The issuance of this executive order was prompted by the fact that, owing to the increase in the armed forces of the United States, the number of insane persons now admitted and entitled to admission to St. Elizabeths Hospital at Washington is greater than that hospital can accommodate properly. The two public health service hospitals, it was pointed out, have adequate facilities and personnel for the care and treatment of insane persons without impairing the efficiency of the service for the purposes for which the hospitals were created and are now maintained.

American Gastroscopic Club.—Announcement has been made of the organization of the American Gastroscopic Club. In its objectives emphasis is placed on the fact that the gastroscope should be an instrument used by internists and surgeons and not by technical specialists. The officers include Drs. Rudolf Schindler, Chicago; Edward B. Benedict, Boston, and Joseph B. Kirsner, Chicago. Applicants for membership must have adequate training in internal medicine, gastroenterology or surgery; they must be members of a scientific organization of high standard or they must be certified by the boards of internal medicine, gastroenterology or surgery, and they must be recommended by two active members. In addition to the officers the following are charter members: Drs. Crawford F. Barnett, Atlanta, Ga.; James L. Borland, Jacksonville, Fla.; James B. Carey, Minneapolis; Allan L. Cohn, San Francisco; John H. Fitzgibbon, Portland, Ore.; Charles A. Flood, New York; John Tilden Howard, Baltimore; Roger H. Keane, Portland; Bruce D. Kenamore, St. Louis; Herman J. Moersch, Rochester, Minn.; Marie Ortmayer, Chicago; Roby John F. Renshaw, Cleveland; Leon Schiff, Cincinnati, and Roy L. Sexton, Washington, D. C. Applications for membership should be directed to Dr. Kirsner, 950 East Fifty-Ninth Street, Chicago.

LATIN AMERICA

Pan American Conference of Public Health.—The eleventh Pan American Conference of Public Health will be held in Rio de Janeiro during the present year, the exact date to be announced later. Members of the committee in charge of arrangements include Dr. João de Barros Barreto, president, and Raul Godinho, secretary.

Oscar de Souza Prize.—The Academia Nacional de Medicina of Rio de Janeiro will give two prizes equivalent in American money to $1,000 and $500 for the best article on "Applications of Index of Oxidase to Medicine." The papers should be sent to the secretary of the academy before April 30 with the proper name of the author and his identification enclosed in a sealed envelop. The prize was established in memory of the late Dr. Oscar de Souza of Rio de Janeiro, who for many years was a professor of physiology at the Academia Nacional de Medicina of Rio de Janeiro.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 24, 1942.

Medical Students and the War

Medical students, like the rest of the population, are subject to conscription. The policy of the government has been to allow them to continue their studies and qualify, as the fighting forces make a large demand on the medical profession. Medical students, though pursuing their studies, are also made use of in the home defense forces either as combatants or as dressers. The present arrangements have given rise to correspondence in the *Times* from leaders of the profession. Dr. A. E. Clark-Kennedy, dean of the medical school of the London Hospital, thinks that medical students should join the home guard (consisting of men mostly past military age who carry on their normal occupations and train for home defense in their spare time). In most units the students need train only on Sunday morning and on one evening during the week. Vacations could be devoted partly to reading and partly to military training. Sir Alfred Webb-Johnson, president of the Royal College of Surgeons, agrees and holds that the students should for the greater part of the year be under combined university and home guard discipline and that it is better that these able bodied young men should be trained to fight the enemy than be used as first aid parties. Sir Edward Graham-Little (dermatologist) describes the scheme adopted at St. Mary's Hospital. The students are given lectures on first aid, anti-gas measures and the use of weapons, and they form a unit which, while retaining its character and identity, has been incorporated into the home guard. Sir Edward gives the principles which have governed this experiment from its inception: 1. All medical students should undergo military training, thus anticipating by eighteen months the present national requirement. 2. The form of training should be decided by the stage which the student has reached: (*a*) junior students (preclinical) should form combatant units and be trained in the use of weapons; (*b*) senior students (clinical) should form medical units to be trained in first aid, hygiene and anti-gas measures; (*c*) students within one year of qualification, and therefore with some two years of medical and surgical training, should be used as clerks and dressers in the emergency medical service (for civilian casualties) if and when required. The success of the St. Mary's Hospital experiment has led to its adoption by several other London hospitals. On the other hand, another correspondent argues that the medical student should be kept to his own department, as in case of military operations in this country there will be far greater shortage of medical personnel than of fighting men and any one with any surgical training whatever will be at a premium.

International Red Cross Conference on Treatment of War Prisoners

The International Red Cross is doing invaluable work for the relief of prisoners of war. Dr. Karl J. Burckhardt and Mlle. Odier, International Red Cross delegates, have come to this country to attend a meeting to discuss the treatment of prisoners of war and interned persons and the help that can be given to them. At a meeting in London they were introduced by Sir John Kennedy, joint director of the Foreign Relations Committee of the Red Cross. The International Red Cross Committee has obtained from several of the belligerents an agreement to apply to civilians the articles of the international convention for the protection of prisoners of war of 1929. The work of the committee also includes a vast category of noninterned civilians, the victims of modern warfare. The problems of organizing help includes sea and land transport and the provision of additional lines of communication for a regular and equitable distribution of relief in food, clothing and medicaments and for intellectual needs. During 1940 the central agency for prisoners of war at Geneva dealt with an average of fifty thousand letters daily, and about six thousand families were informed each day of the fate of prisoners.

Dr. Burckhardt said that the prison camps in Germany were visited regularly by delegates of the International Red Cross. Excellent work was done by the small fleet of International Red Cross ships at Lisbon, which carries parcels to Marseilles, whence they are dispatched to Geneva for the prison camps. Since the beginning of the war over two million parcels had been distributed.

The Diabetic Motorist

According to the law an applicant for a driving license must make a declaration as to whether he is suffering from any disease or disability which is specified on the form or from any which would be likely to cause his driving of a vehicle to be a danger to the public. If he does, the licensing authority must refuse him a license. An application was made by the police to the Belfast magistrates that a diabetic physician should be deprived of his driving license. They contended that the reactions to medical treatment rendered him unfit to have control of a car. But the physician to the biochemical department of the Royal Victoria Hospital gave evidence that, provided diabetes was properly controlled by insulin, there was no reason why the patient should suffer from insulin coma. The magistrate said that this was the first case of the kind in his experience. He refused the application of the police, which would, in effect, disqualify thousands of drivers who use the roads with as much safety as those who do not suffer from diabetes.

"Crush Syndrome" in Obstetrics

As reported in THE JOURNAL, June 28, 1941, page 2880, the bombing of our civilian population from the air led to the discovery of a new pathologic condition—renal failure after crushing of the limbs by fallen débris. In the *British Medical Journal*, Dec. 20, 1941, page 887, James Young and John McMichael reported from the obstetric department of the British Postgraduate Medical School 2 cases of an apparently similar condition following the trauma of labor. A woman had a difficult labor lasting twenty-three hours. She rallied from the severe shock only to die eight hours later of renal failure, the blood urea reaching 388 mg. per hundred cubic centimeters before death. The chief histologic lesions were found in the kidney and resembled those described in the cases of crushing by fallen débris—tubular degeneration with hematogenous casts in the tubules. The second patient had oliguria after a difficult labor lasting fifty-eight hours, the blood urea reading being 79 mg. per hundred cubic centimeters. There was no shock, and recovery was rapid.

These cases suggest a condition in obstetric practice apparently heretofore unrecognized. As it is evidently rare, there is need for concerted study in obstetric centers. The question arises whether it throws any light on the baffling problem of "obstetric shock," in which trauma of the pelvic soft parts plays an important part. Some obstetricians hold that obstetric shock is due to flooding of the circulation with toxic elements from the crushed tissues. A Medical Research Council subcommittee has been set up to coordinate research on the crush syndrome and invites the sending of any available data.

PALESTINE

(From Our Regular Correspondent)

Jan. 23, 1942.

In Wartime

The transition from peace to war was not difficult for the inhabitants of Palestine, notwithstanding the fact that the Middle East was one of the main objectives of the enemy. On the one hand, on the outbreak of the second world war the people of this country were in the midst of a partisan war for some three years (1936-1939) as a result of the riots, which had a derogatory effect on the economic life of the Jewish population and almost completely destroyed the economic structure of the Arab inhabitants. On the other hand, at the time of the outbreak of hostilities the Middle East was still removed from the actual battle zone, and the appearance of a common foe settled the dispute between the two nations in the country. An unconditional truce was the result, and the economic and social life was resumed on a much wider scale.

Once again the physician was the first to experience the improved condition, just as he is the first to be affected by adverse circumstances.

Arab patients, who for years did not dare to visit the Jewish physician in the neighboring village, owing to the internal terrorism which reigned among the Arab population, flocked to him with their complaints. The Arab worker appeared on the labor market and in the Jewish groves and, most important of all, the Arab farmer once again found a good market for the vegetables, eggs and other produce of his primitive farm.

MEDICAL SUPPLIES

One of the main problems of the country was the question of supply. A country dependent to a great extent on imports cannot remain calm during wartime, when the question of sea transport and shipping space is of utmost importance. Palestine's main export product—citrus fruit—could not be sent to foreign markets, thus causing a crisis in the citrus industry and a formidable state of unemployment in the citrus settlements. For our requirements of medicaments we were also dependent almost entirely on imports. Action was therefore needed in three different directions: (*a*) preparation of sufficient stocks of medicaments, surgical bandages, x-ray films, serums; (*b*) intensified local production; (*c*) maximum economy. It is gratifying to record that success was attained on all three points.

Until Italy's entry into the war and while some of the European countries still remained unmolested, we were able to concentrate on medical supplies. However, as time passed, one after another the countries fell victim to the enemy—Finland, Norway, the Netherlands, Denmark, Belgium and France—and although the seas stayed free and for many months after the fall of these countries we received our orders, we knew they were the last we would receive. With the entrance of Italy into the war, only two countries were left as possible sources of supply: the United Kingdom and the United States of America. Conditions became more acute and the supply position became more difficult from day to day. Execution of an order from the day it was placed and until receipt of the goods took from eight to fourteen months. The position was even more serious in connection with medicines whose period of efficacy is limited, such as insulin, protamine zinc insulin, serums and x-ray films. We were faced with problems never known before. Once we valued the ampule because of its contents, now it is the empty ampule that is of most value. For example if, say we have a sufficient stock of morphine in substance, it is feared that we may not, in future, have the empty ampule for refilling with morphine, or whether we shall have the syringe and needle for the injection. The few instances given prove the necessity to adhere to the other points mentioned: intensive local production and maximum economy.

As conditions became grave, the country was already in such a state of intensive local production in all branches of industry and manufacture, including that of medical supplies, as to be of aid not only to the civilian population but also to the military authorities. The medical man derived a certain measure of comfort from the thought that there were ample supplies not only of locally brewn beer, fresh eggs, milk and butter—required also by the military hospitals—but, in the main, from the fact that locally manufactured cotton wool, bandages, and so on, could be obtained.

A project for the establishment of an institute for the production of various serums is now under consideration by the Jewish community.

Those of the inhabitants of this country who went through the last world war and remember the poverty which prevailed throughout Palestine and the absolute dependence of the country on the outside world for all the needs of life, especially in the field of medicine, can appreciate the present state of the local population in the agricultural and industrial domains and, to no little extent, in the field of medicine.

AERIAL BOMBARDMENTS

Italy's entry into the war, the Libyan campaigns and the conquest of Syria by the Allied forces converted Palestine into a battlefield. The blackout brought many accidents on the roads which the military traffic serves to enlarge by day as well as by night. The numerous air raid alarms, even when no actual raid follows, have derogatory effects on the health of the population, although comparatively slight. In this totalitarian war with an enemy who makes no distinction between the soldier in battle and the baby reposing in its cradle, the condition of the civilian population is often worse than that of the soldier. Haifa is a port town where heavy industry is concentrated; although it has been repeatedly bombed, the number of its victims was comparatively small, as, with the approach of enemy planes, antiaircraft batteries go into action. Over an open town, where there are no antiaircraft guns, the planes linger over the town, choose their targets and release their load of bombs without themselves incurring any danger. The bombing of Tel-Aviv is proof of this. Tel-Aviv was bombed twice, once in the afternoon and once at night. The total number of victims caused by the first raid was one hundred and twenty-one and by the second raid thirteen. On Sept. 9, 1940 the one hundred and eighty thousand inhabitants of Tel-Aviv were pursuing their daily activities without suspecting anything about to happen. Suddenly bombs rained on the town for approximately one minute and fell in the main streets, thronged with people, causing the death of fifty-seven men, forty-four women and twenty children. In the second raid, on June 12, 1941, an Invalids' Home was completely demolished at a time when the inmates could not descend to the shelter, owing to their feebleness. The number of victims was four men and nine women.

KUPAT HOLIM, THE SICK FUND OF THE GENERAL FEDERATION OF JEWISH LABOR

Kupat Holim cares for the health of two hundred thousand people and has at its disposal two hospitals, convalescent homes, dispensaries in two hundred and forty branches throughout the country, in the town as well as in the most remote and small agricultural settlements. With its three hundred and fifty physicians, two hundred and fifty nurses, a large number of pharmacists and dental surgeons, with its own pharmacies in every town and village, and with a central supply store, x-ray institutes, diagnostic and physical therapeutic clinics during riots and in wartime it is incumbent on such an institution to fulfil manifold duties not only on behalf of its members but for the whole populace. During aerial bombardments, the dispensaries of Kupat Holim are the natural place to which the wounded

come for first aid. In many of the settlements, Kupat Holim dispensaries are the only ones where first aid can be given. Such dispensaries are therefore supplied with a stock of dressings and medicaments. All the physicians and nurses of Kupat Holim always stand by to tender first aid in the dispensaries, which are considered also as first aid posts. In every rural area there is a central dispensary with up to date equipment and with specialists on its staff, where the sick and wounded are brought for more serious treatment or if it is necessary to have a medical consultation.

The two Kupat Holim hospitals serve as reserve for the admittance of wounded in the event of a heavy raid. Both hospitals are situated in rural districts and are not so easy a target as the town hospitals. The Hadassah hospital is on Mount Scopus, Jerusalem, and we still delude ourselves that this town, holy to all the races and creeds, even a totalitarian foe will not dare to attack. The second Kupat Holim hospital is situated on a hillock in the center of the Jezreel Valley and, although it has only eighty beds, accommodation for one hundred additional persons was prepared by outfitting a neighboring school as a hospital. Five thousand dollars was invested for this purpose by Hadassah and the Vaad Leumi. This central hospital at Afuleh is intended mainly for the wounded of Haifa, in case there will be need to transfer patients from the hospitals of that town to a safer locality. The hospital in question has modern equipment and facilities for any operation which may be required. The Kupat Holim Convalescent home on Mount Carmel, Haifa, is also intended to serve as a reserve for the wounded of Haifa. Another Kupat Holim convalescent home at Arzo, near Jerusalem, is to serve, as all hospitals in Jerusalem, for use in case of evacuation or the transfer of patients from bombed areas, especially Tel-Aviv.

AUSTRALIA

(From Our Regular Correspondent)

Dec. 26, 1941.

Australia Sends Medical Aid to Russia

Medical supplies to the value of many thousands of pounds have already been sent to Russia from Australia. They will be available either for military or for civilian use. Russian authorities have provided a list of medical supplies which they require from external sources. An exportable surplus of a number of these supplies is available in Australia. Money collected in appeals for monetary aid to Russia will be used in other countries to purchase supplies which cannot be supplied from Australia.

The Commonwealth Serum Laboratories

Among the industrial and scientific establishments which have become essential to Australia's war organization are the Commonwealth Serum Laboratories at Royal Park, Melbourne, which are the largest of their kind in the Southern Hemisphere. Since the outbreak of war they have been working at high speed in supplying serums, vaccines and other biologic products for the fighting services and the civil community, and they now manufacture almost the whole range of biologic products. For some time the laboratories have been capable of supplying the needs of Australia and its fighting forces overseas, and recently they were extended to enable them to relieve the United Kingdom of the task of supplying such products to other British possessions bordering the Pacific and Indian oceans and friendly non-British powers. The serum laboratories were established in the early days of the first world war to meet an emergency caused by the cessation of supplies of serum and vaccines from overseas. A staff of about three hundred, consisting of graduates of human and veterinary medicine, specially trained in bacteriology and pathology, and highly skilled biochemists, physicists and botanists, is conducting brilliant research into every relevant aspect of bacteriology and immunology. As the growth of medical knowledge opens up new fields of treatment, prevention and diagnosis, new serums and prophylactic agents are being tested. The live stock population of the laboratories totals many thousands of guinea pigs, rabbits, mice, rats, horses, cattle, sheep, dogs, donkeys and bandicoots.

These laboratories are unaffected by constitutional limitations which restrict commonwealth action in other phases of public health control in Australia, and in their twenty-five years of existence they have shown a record of steady development, high scientific attainment and commercial success conspicuous among government institutions. They now play a part in Australia's national economy for which there is no substitute. The volume of business has steadily increased, and the growing profits are paid into a trust account. It is the policy, however, first to pass on to the public the benefit by way of reduced prices for products and, second, to extend the facilities for research into some of the obscure aspects of this branch of medical treatment. Results have been most encouraging and have proved beyond doubt the wisdom and soundness of this policy. It has always been the aim of the laboratories to supply only agents of proved value, uniform in potency and standardized according to the best technic available. The laboratories have been appointed the national center for the maintenance in Australia of the standards of the Permanent Commission on Biological Standardization of the League of Nations.

SERUM PRODUCTS

The department responsible for the production of insulin used in the treatment of diabetes has steadily grown, and the amount of insulin now being regularly issued is very large. Commonwealth solution of pituitary is now well established among the practicing profession as a sound therapeutic agent, and supplies of the commonwealth subsidiary standard of pituitary are regularly renewed and checked against the international standard. Thyroid tablets are produced and standardized in terms of thyroxine iodine in accordance with the recommendations of the British Pharmacopeia. Although the local demand for jennerian calf lymph for vaccination against smallpox is not great, adequate supplies are constantly maintained in a readily available form to meet any possible epidemic emergency. The vaccine department of the laboratories produces a wide range of vaccines for prevention or treatment of such diseases as cholera and plague, dysentery, gonorrhea, influenza, whooping cough, typhoid and coryza and the streptococcic and staphylococcic infections. In addition, this department makes special vaccines to prescriptions. Separate departments produce diphtheria and tetanus toxins and also toxoids. The latter are used for the prevention of these diseases in human beings and animals. A special anaerobic department prepares toxin for the production of gas gangrene antitoxin and other serums. In other departments, serums are prepared for treatment of many other diseases, including anthrax, dysentery, gonorrhea, cerebrospinal meningitis, gas gangrene and pneumonia.

Part of the laboratories were recently rebuilt and specially equipped for the investigation of vitamins. High grade spectrophotographic and other apparatus are used.

Antivenins for the treatment of snakebite of the Australian venomous snakes have been the subject of intensive investigation for the last ten years, and antivenene is now available for the most poisonous of the Australian snakes. A large range of tuberculins is prepared by a special department from human and bovine strains of Mycobacterium tuberculosis for the diagnosis of tuberculosis in human beings and animals. Other preparations from similar organisms are also available. In the allergen department a large number of special extracts for testing and treatment of hay fever and asthma are prepared. These are derived from such diverse sources as grass and other

plant pollens, animal hair, dandruff, many foods and miscellaneous substances such as house dust, orris root and insect bodies. The medium department supplies several hundred different types of bacteriologic medium for use by bacteriologists within the serum laboratories and in the special departments of hospitals and other institutions throughout Australia. Another special department prepares various agents for the diagnosis of disease as used in the practice of human and veterinary medicine by pathologic departments of hospitals. Although, for the last fifteen years, the production of veterinary biologic products has been a feature of the work of the laboratories, there has been an extensive development in this direction more recently. The products have been used in greatly increased amounts in all states for the prevention or treatment of disease in domestic animals due to black disease, botulism, tetanus, enterotoxemia, blackleg, canine distemper and canine tick poisoning. The care and treatment of many thousands of animals is the responsibility of the veterinary staff.

OTHER ACTIVITIES

It would be a misconception to regard the serum laboratories as an institute solely devoted to the preparation and distribution of biologic products. A large portion of the work consists in activities other than production as already indicated. The laboratories do much work as part of the commonwealth department of health, exercising advisory, investigative and routine functions in a special capacity. In addition, regular annual examinations are held for several grades of officers in the department. These are compulsory for all these grades throughout the health service. The Commonwealth Serum Laboratories combine scientific achievement with commercial enterprise in an institution which serves Australia well in time of peace. In time of national emergency—such as the present—it provides a service vital to the civil population and the fighting services as well as to those units of the empire and allied nations dependent on Australia in this respect.

Scheme for National Medical Service in Australia

The National Health and Medical Research Council has prepared a scheme for a salaried medical service throughout Australia. More than £13,000,000 a year would be needed for the scheme. Against this amount the council claims that Australia's four thousand doctors are paid well over £8,000,000 a year. This total includes more than £7,000,000 paid by the public, £864,341 by friendly societies, and £1,000,000 under the national insurance act. Under the scheme, medical care would be coordinated for the benefit of the patient while safeguarding the free choice of doctors, thus minimizing the overlapping caused by professional competition and pooling professional knowledge. General practice would be returned to the general practitioner as far as possible. Specialist, consultant and auxiliary services would be made as widely accessible as possible, and there would be a better distribution of medical men in terms of medical needs.

The scheme provides for improving existing medical facilities in many ways, by making services available to all people of any income, by regulating distribution of doctors, by bringing preventive and curative services into an organic union and by increasing opportunities for productive research. There would be coordination of protective health services with the correct provision for medical care. Outpost and remote areas which at present cannot support a doctor would come into a grouping under which salaried personnel would be evenly distributed. Medical practitioners would be relieved of the present handicap of their "twenty-four hours a day accessibility" and would be ensured adequate remuneration for their services. All forms of hospital and institutional services would be extended and developed under the scheme.

The outline for national salaried medical service is necessarily only tentative at present. Governments could not adopt the principles advanced until some general estimates of the financial charges and commitments have been supplied. Realizing this, the council has elaborated the scheme along technical lines to incorporate general costs in all states. The council has not offered any suggestion as to the manner in which the service recommended should be paid for by the public, although it recognizes that some form of direct or indirect taxation seems inevitable. Compulsory insurance for all people receiving £416 or less a year has been suggested by the British Medical Association. This would bring them within reach of such a national service. The council considers that, whatever scheme is ultimately accepted, it should be one freely available to all the people of the commonwealth.

Criticism of Housing Conditions

Addressing the thirtieth annual conference of health inspectors in New South Wales the minister for health (Mr. Kelly) delivered a trenchant criticism of housing conditions, which he said causes much of the ill health of our community. Criticism was also made of the modern type of block flats erected in the city area. Many of these flats consist of little cubicles with smaller cubicles attached for kitchen purposes and for bathing and sanitation. They are a menace to health and must eventually develop into slums. Increase in the number of flat dwellers and the habit which has arisen of converting larger homes into a group of several smaller flats, often with the help of a veranda walled in to make extra rooms, has led to parliamentary action which requires that in any new house no room shall be built which has not at least one wall facing to the exterior. While this may be desirable as a means of eliminating badly illuminated, badly ventilated inside rooms, it has a disadvantage in tropical areas in that it does not allow home makers the protection of wide verandas against the summer heat and glare. A more direct control of the housing problem is needed.

Tuberculin Tests for Militia

The testing of members of the militia (home defense) forces in Australia for tuberculosis has now begun. X-ray examinations are being made similarly to those for members of the Australian imperial force and apply to eighty thousand members engaged in military duties for the duration of the war.

Honor for John Flynn

The Right Rev. John Flynn, founder and superintendent of the Australian Inland Mission, has received the degree of Doctor of Divinity, conferred by the Presbyterian College of the McGill University, Toronto. "Flynn of the Inland" was virtually responsible for founding the Flying Doctor services for the Australian "out back."

Marriages

JESSE MARTIN KIRBY to Miss Florence L. Rucks, both of Little Rock, Ark., in Charleston, W. Va., Nov. 8, 1941.

BARRON DWINELL KNOX, Holyoke, Mass., to Miss Jane Webb Bratton at Washington, D. C., Dec. 7, 1941.

JAMES TATE MASON JR., Bellevue, Wash., to Miss Margaret Elisabeth Thomas at Bluefield, W. Va., January 10.

ABRAHAM HYMAN RUSSAKOFF to Miss Irene Gertrude Lewis, both of Baltimore, Nov. 28, 1941.

CHARLES ARTHUR GLENN to DR. DOROTHY NORMAN, both of Gastonia, N. C., recently.

EDWARD PAUL SHERIDEN, Sumner, Ill., to Miss June Russell of Harvey in January.

Deaths

Rock Sleyster ✦ President of the American Medical Association, 1939-1940, died, March 7, at his home in Wauwatosa, Wis., aged 62, of heart disease. Dr. Sleyster was born in Waupun, Wis., June 14, 1879. After graduation from the College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, in 1902 he entered the practice of medicine. He became secretary of the Calumet County Medical Society in 1903, continuing for six years, and was thereafter continuously associated with organized medicine. He was elected assistant secretary of the State Medical Society of Wisconsin in 1910 and served until 1914, when he became secretary. This position he occupied until elected president in 1924. In 1925 he was made treasurer of the society, serving for many years. From 1918 to 1923 Dr. Sleyster was editor of the *Wisconsin Medical Journal*.

In 1913 and 1914 and from 1918 to 1926 he served as delegate to the American Medical Association and during the last four years of that period was Vice Speaker of the House of Delegates. He became a Trustee of the American Medical Association in 1926 and served continuously until 1937, acting as Chairman of the Board from 1935 to 1937.

Dr. Sleyster first practiced medicine at Kiel and Appleton, Wis. Then he became physician to the prison for the criminal insane at Waupun, Wis., where he did research, much of which was published. He was medical director of the Central State Hospital for Insane, Waupun, from 1909 to 1919, when he resigned to become medical director of the Milwaukee Sanitarium, Wauwatosa.

During the World War Dr. Sleyster was a major in the United States Army Medical Corps and was appointed medical aide to the governor of Wisconsin. From 1916 to 1920 he served as chief of the Bureau of Post-Graduate Medical Instruction at the University of Wisconsin Extension Division. He was a fellow and a member of the board of governors of the American College of Physicians and a member of the American Psychiatric Association, the Association for Research in Nervous and Mental Diseases and the Central Neuropsychiatric Association.

ROCK SLEYSTER, M.D., 1879-1942

Dr. Sleyster was devoted to the service of his profession and to its members. He gave freely of his time and worked many extra hours both day and night for the advancement of medical organization. He was gentle, modest, thoughtful and altogether a most cultured and genial gentleman.

Lawrence Joseph Henderson, Cambridge, Mass.; Harvard Medical School, Boston, 1902; lecturer on biological chemistry, 1904-1905, an instructor from 1905 to 1910, assistant professor from 1910 to 1919, professor from 1919 to 1934, and since 1934 Abbott and James Lawrence professor of chemistry at his alma mater; director of the Fatigue Laboratory at Harvard Business School since it was established in 1927 and chairman of the Society of Fellows at Harvard University since it was founded in 1933; in 1921 served as exchange professor at the University of Paris, France, in 1928 Silliman lecturer at Yale University, New Haven, Conn., and in the same year Leyden lecturer at the University of Berlin, Germany; in 1931 Mills Lecturer at the University of California, Berkeley; foreign secretary of the National Academy of Sciences and a fellow of the American Academy of Arts and Sciences; member of the Association of American Physicians, American Physiological Society, American Society of Biological Chemists, American Chemical Society and the American Philosophical Society; corresponding member of the Académie de médecine, Paris; member of the Legion of Honor of France; author of "The Fitness of the Environment," 1913, "The Order of Nature," 1917, "Blood," 1928, and "Pareto's Sociology," 1935; was awarded the honorary degree of doctor of science by Harvard University in 1932 and the University of Cambridge, England, in 1934; aged 63; died, February 10, in the Phillips House of the Massachusetts General Hospital, Boston.

John McHale Dean ✦ St. Louis; Washington University School of Medicine, St. Louis, 1896; assistant in anatomy at his alma mater, 1897-1898; instructor in surgery, St. Louis University School of Medicine, from 1903 to 1911, assistant professor from 1911 to 1921 and later associate professor of surgery; assistant superintendent, St. Louis City Hospital, 1898-1899; visiting surgeon, St. Anthony's Hospital, from 1900 to 1909; chief surgeon on the staff of St. Mary's Infirmary from 1909 to 1924 and on the staff of the Mount St. Rose Sanatorium during the same period; since 1924 surgeon to St. John's Hospital; served during the World War; aged 66; died, Dec. 8, 1941.

Virginius Dabney, Washington, D. C.; University of Virginia Department of Medicine, Charlottesville, 1902; at one time professor of laryngology and otology at the George Washington University School of Medicine; member of the American Laryngological Association; fellow of the American College of Surgeons; formerly otolaryngologist to the Garfield Memorial Hospital and the Washington Orphan Asylum; surgeon, Episcopal Eye, Ear and Throat Hospital, and laryngologist to the George Washington University Hospital; formerly surgeon for the police and fire departments; aged 63; died, January 18, in the Emergency Hospital of coronary disease.

Leslie Frederick MacDiarmid ✦ Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1909; formerly professor of therapeutics at the Loyola University School of Medicine; fellow of the American College of Surgeons; member of the surgical staff of the Garfield Park Hospital; attending surgeon at the University Hospital; aged 57; died, January 20, at his home in Oak Park, Ill., of acute dilatation of the heart.

Richard Clyde Lowry, Oklahoma City; University of Oklahoma School of Medicine, Oklahoma City, 1916; professor of clinical obstetrics at his alma mater; member of the Central Association of Obstetricians and Gynecologists; fellow of the American College of Surgeons; member of the staffs of the State University and Crippled Children's Hospital, St. Anthony Hospital and the Wesley Hospital; aged 50; died, Dec. 2, 1941, of coronary occlusion.

Benjamin Edgar Miller, New Smyrna Beach, Fla.; College of Physicians and Surgeons, Baltimore, 1892; member of the Florida Medical Association; past president of the Volusia County Medical Society and the Tattnall-Evans County (Ga.) Medical Society; for many years chairman of the board of trustees of the Claxton (Ga.) schools and trustee of the Brewton Parker Junior College, Mount Vernon, Ga.; aged 70; died, Dec. 21, 1941.

Truman E. Loope Jr., Iola, Wis.; Rush Medical College, Chicago, 1894; past president of the Waupaca County Medical Society; trustee of the village of Iola from 1901 to 1905 and

from 1912 to 1916 and president from 1906 to 1908; formerly health officer; formerly director of the school board; aged 71; died, Dec. 6, 1941, of myocarditis.

Francis Joseph Cahill, Hoosick Falls, N. Y.; Cornell University Medical College, New York, 1906; member of the Medical Society of the State of New York; served during the World War; health officer of the town and village of Hoosick Falls; aged 63; died, January 6, of coronary thrombosis.

Robert Eyris Bley ✠ Bunker Hill, Ill.; Jefferson Medical College of Philadelphia, 1910; past president of the Macoupin County Medical Society; served during the World War; aged 54; died, January 18, in the Alton (Ill.) Memorial Hospital of carcinoma of the lung with mestastases to the brain.

Charles E. B. Flagg, Vancouver, Wash.; University of Georgia Medical Department, Augusta, 1890; member of the Washington State Medical Association; veteran of the Spanish-American and World wars; served in the Philippines during the China insurrection; aged 71; died, Dec. 6, 1941.

Fred Hercules Bell, Baldwin City, Kan.; University Medical College of Kansas City, Mo., 1905; member of the Kansas Medical Society; physician for the county board of selective service; served during the World War; aged 60; died, January 7, of coronary thrombosis.

Charles Boarman Harris, Pembina, N. D.; College of Physicians and Surgeons, Baltimore, 1880; member of the North Dakota State Medical Association; served on the city and county health boards; aged 84; died, January 2, of arteriosclerosis and heart disease.

Clarence Taylor Fowler, Dexter, N. Y.; Syracuse University College of Medicine, 1907; member of the Medical Society of the State of New York; health officer; aged 58; died, Dec. 29, 1941, in the Mercy Hospital, Watertown, of coronary thrombosis.

Howard Burnett Speer, Stamford, Conn.; Long Island College Hospital, Brooklyn, 1893; formerly assistant medical director of the Metropolitan Life Insurance Company, New York; aged 71; died, January 2, in Toronto, Ont., Canada, of heart disease.

George Millward Brewer, Plumsteadville, Pa.; University of Maryland School of Medicine, Baltimore, 1910; member of the Medical Society of the State of Pennsylvania; aged 56; died, January 11, in St. Petersburg, Fla., of cerebral hemorrhage.

Heman Bangs Andrew, Newark, N. J.; University of the City of New York Medical Department, 1878; aged 88; died, January 14, in the Hospital of St. Barnabas and for Women and Children of arteriosclerotic heart disease and hypertrophic prostatitis.

Otis P. Hamilton ✠ Forrest, Ill.; Illinois Medical College, Chicago, 1907; past president of the Livingston County Medical Society; served during the World War; aged 59; died, January 19, of cerebral hemorrhage, hypertension and coronary sclerosis.

Raymond Edmund Doering, Minneapolis; St. Louis University School of Medicine, 1924; member of the Minnesota State Medical Association; aged 47; died, January 13, of abdominal carcinomatosis with pulmonary metastasis.

James F. Chvatal, Berwyn, Ill.; Rush Medical College, Chicago, 1893; member of the Illinois State Medical Society; on the staff of Hospital of St. Anthony de Padua, Chicago; aged 76; died, January 27, in Chicago of nephritis.

George Charles Anderson, Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1903; member of the Medican Society of the State of Pennsylvania; aged 66; died, January 1, of angina pectoris and arteriosclerosis.

James D. Byrns, Mitchell, Ind.; Louisville (Ky.) Medical College, 1894; past president of the Lawrence County Medical Society; health officer; aged 71; died, January 18, in the Dunn Hospital, Bedford, of carcinoma of the liver.

Wade Kisinger Chamberlin, Tiffin, Ohio; Cleveland Medical College, 1895; member of the Ohio State Medical Association; served during the World War; aged 71; died, January 6, of diverticulitis of the colon.

Eleanor Frances Martin, Pasadena, Calif.; Hahnemann Hospital College of San Francisco, 1892; aged 74; died, January 2, in the Huntington Memorial Hospital of a fractured hip and tuberculosis of the cecum.

Cora Clementine Bash, Peiping, China; Woman's Medical College of Pennsylvania, Philadelphia, 1911; medical missionary; superintendent of the Douw Hospital; aged 59; died, Dec. 23, 1941, of endocarditis.

William Edward Gault, Portsmouth, Ohio; Pulte Medical College, Cincinnati, 1897; member of the Ohio State Medical Association; served during the World War; aged 73; died, January 5, of heart disease.

John W. Kremer, Louisville, Ky.; Hospital College of Medicine, Louisville, 1897; member of the Kentucky State Medical Association; aged 72; died, January 1, in St. Anthony's Hospital of heart disease.

Henry Lee Banks, Hannibal, Mo.; St. Louis Medical College, 1890; member of the Missouri State Medical Association; aged 77; on the staff of the Levering Hospital, where he died, January 10, of uremia.

George W. R. Smith, Mesilla Park, N. M.; Arkansas Industrial University Medical Department, Little Rock, 1891; aged 74; died, Dec. 13, 1941, in Berkeley, Calif., of angina pectoris and uremia.

James Alexander Collins, Birmingham, Ala.; Louisville (Ky.) Medical College, 1891; member of the Medical Association of the State of Alabama; aged 72; died in November 1941 of myocarditis.

Gray Chandler Briggs, St. Louis; St. Louis College of Physicians and Surgeons, 1909; served during the World War; aged 59; died, January 23, in the Missouri Baptist Hospital of lobar pneumonia.

Daniel Paul Gillespie, New York; University and Bellevue Hospital Medical College, New York, 1906; member of the Medical Society of the State of New York; aged 69; died, Nov. 28, 1941.

Paul Elliott Beach, Cleveland; University of Wooster Medical Department, Cleveland, 1912; on the visiting staff of St. Luke's Hospital; aged 56; died, January 17, of coronary thrombosis.

Joseph Floyd Hager, Chattanooga, Tenn.; Chattanooga Medical College, 1910; at one time mayor of Alton Park; aged 63; died, January 4, of coronary heart disease and chronic nephritis.

Gordon T. Atkinson, Crisfield, Md.; University of Pennsylvania Department of Medicine, Philadelphia, 1869; at one time bank president; aged 95; died, January 14, of arteriosclerosis.

Clara Susan Hampson, East Orange, N. J.; Eclectic Medical College of the City of New York, 1888; aged 85; died, Dec. 18, 1941, in the Orange (N. J.) Memorial Hospital.

Arnold Theodore Droste ✠ Detroit; Detroit College of Medicine and Surgery, 1924; aged 48; died, January 12, in the Marr General Hospital of cirrhosis of the liver.

Joseph Wilson Darrah, Martins Ferry, Ohio; Western Reserve University Medical Department, Cleveland, 1882; aged 83; died, January 3, of cerebral hemorrhage.

Arthur I. Brown, Cleveland; Western Reserve University Medical Department, Cleveland, 1893; also a dentist; aged 69; died, January 11, of coronary embolism.

Henry Fuller Rathbun, Mexico City, Mexico; University and Bellevue Hospital Medical College, New York, 1906; aged 61; died, Nov. 14, 1941, in Los Angeles.

John Wesley Story, Perry, Ga.; Kentucky School of Medicine, Louisville, 1893; member of the Medical Association of Georgia; aged 70; died, Nov. 4, 1941.

George Wing Dryer, Moline, Ill.; Harvard Medical School, Boston, 1931; aged 37; died, January 12, of ruptured varicosity at the cardiac end of the stomach.

Thomas J. Brown, Glenford, Ohio; University of Tennessee Medical Department, Nashville, Tenn., 1890; aged 77; died, January 11, of heart disease.

Daniel Rufus Kneece, Pelion, S. C.; University of Georgia Medical Department, Augusta, 1887; aged 82; died, January 17, of cerebral hemorrhage.

John Andrew Settle, McAlester, Okla. (licensed in Oklahoma under the Act of 1908); aged 64; died, Nov. 13, 1941, of arteriosclerosis.

Ernest G. Earnheart, Oklahoma City; Missouri Medical College, St. Louis, 1899; aged 68; died, February 21, of coronary thrombosis.

James Newton Thomas, Lucasville, Ohio; Miami Medical College, Cincinnati, 1891; aged 77; died in November 1941.

Leland Le Grand Fillmore, Los Angeles; Albany (N. Y.) Medical College, 1896; aged 67; died, Nov. 8, 1941.

Mindia Phelps Sears, Carpinteria, Calif.; Cleveland Medical College, 1897; aged 74; died, Dec. 31, 1941.

Correspondence

STREPTOCOCCUS VIRIDANS SEPTICEMIA

To the Editor:—The January 31 issue of THE JOURNAL contains a clinical note, "Streptococcus Viridans Septicemia: A Cure with Sulfapyridine," by Drs. G. B. Moore Jr. and A. J. Tannenbaum of Camp Claiborne, Louisiana. The title is unfortunate, since it implies that infections produced by the usual etiologic agent in cases of subacute bacterial endocarditis can be controlled by sulfapyridine. As a matter of fact, little if any evidence has been presented concerning the effectiveness of the sulfonamides in cases of subacute bacterial endocarditis caused by Streptococcus viridans.

The difficulty appears to arise from the classification of the streptococcus, since not all the streptococci that produce so-called alpha hemolysis on blood-agar plates are Streptococcus viridans. A true Streptococcus viridans produces a pinpoint colony that is surrounded by a narrow zone of greenish discoloration (alpha hemolysis), whereas by far the majority of alpha hemolytic streptococci have much larger colonies that are surrounded by relatively wide zones of greenish discoloration, often including halos of true hemolysis. The latter are always present in the normal secretions of the nose and mouth and in the nasal discharges and sputum in cases of infection of the upper respiratory tract. Furthermore, at the Boston City Hospital they have often been recovered from blood cultures taken from patients with tonsillar infections, puerperal sepsis and other acute infections. Their presence does not indicate a hopeless prognosis—in fact, by far the majority of patients recover—and as a rule there is no suggestion of endocarditis. In other words, I venture to suggest that the organism recovered from Drs. Moore and Tannenbaum's patient was not Streptococcus viridans but one of the other alpha hemolytic streptococci. If this is so, the corollary, of course, is that one should not expect to cure a patient with subacute bacterial endocarditis due to Streptococcus viridans by the use of sulfapyridine.

ROBERT N. NYE, M.D., Boston.

THE ORR METHOD FOR WOUNDS AND COMPOUND FRACTURES

To the Editor:—Because of many inquiries and some misunderstanding I should like to explain certain points with regard to the Orr method for wounds and compound fractures.

A "Wide World" dispatch this morning from Kuibyshev stated that a modernized method of the Russian surgeon Pirogov is the one now being employed among the Russian troops for the treatment of gunshot wounds and fractures. It is said that "airtight" plaster of paris casts are a factor in the treatment. Similar statements about tight casts and foul smelling dressings have delayed the general acceptance of the program that I have been advocating. The surgical treatment program that I have been recommending for twenty years is immediate replacement of injured parts in correct position, open drainage of infected wounds, immobilization of the extremities in plaster of paris casts and infrequent dressing to protect against secondary infection. These are all essential for good surgery in either military or civil practice.

With regard to the tight fitting casts, I have stated repeatedly that casts without padding are not suitable for general employment. It is much better to maintain length and correct position, as well as immobilization, by means of skeletal fixation with the pins embedded in the plaster of paris cast. This will avoid constriction or pressure in these important immobilizing dressings.

Trueta, whose name has often been connected with this method because of his fine work in Barcelona, has always recognized these points in his use of this method.

The Russian surgeon Pirogov, who is mentioned in today's message from Kuibyshev, was a military surgeon in the Caucasus and in the Crimea in 1854. He made many important contributions to surgical methods and to both military and civil practice. His exact relationship to this method is shown in letters that I had from Leningrad some years ago.

Professor S. Novotelnov of the famous clinic of Professor Turner in Leningrad, wrote to me on March 28, 1933 as follows:

> My dear Professor Orr, I have received your kind letter dated the 10th of February, and the booklets and reprints, for which I am very much obliged to you. I communicated my contentment to Professor Turner, and he was delighted with your extreme kindness. My works on the osteomyelitis treatment according to your method are advancing. Before publication I expect, if possible, the complete recovery of all the patients on whom I have operated this year.
>
> The comparison between the results of the Orr method and the results of other methods of treatment in which I have an experience of twenty years, and on which I have printed works, gives me the right to expose the following considerations: Having accomplished a revolution and established a new era [by the Lister antiseptic method], surgery has later changed by means of evolution into physical antiseptics, which is the foundation of the rational modern method of wound treatment. That the ideas of physical antiseptics were in the air [some time ago] is to be seen in the doctrines of another surgeon of genius belonging to that epoch, N. I. Pirogov. As early as the year 1865 he considered as evident the merits of a good drainage and of a well absorbing dressing material for the protection and cleansing of wounds; and, on the other hand, Pirogov says that "immobilization is an important factor for wound treatment." In another place Pirogov is saying "A plaster bandage may be ranked not only among the palliative means but also among those preventing inflammation."

Professor Novotelnov further says:

> The demands of Orr are an extensive drainage and a pedantic cleansing from sequestrums and necrotic bone tissues and the formation of an extensive outlet of the bony trough. These have always been the requirements of rational practical surgery. To safeguard the wound from irritation and secondary infection, Orr wishes to use a drainage petrolatum gauze plug. The same is to be said concerning the keeping of a dressing for a long time on an infected wound by Pirogov and even by Larrey, Napoleon's surgeon in 1812. Larrey sometimes did not change his dressings for as much as eight days, although in that time worms were already crawling on them.

This is the historical account which gave rise to the suggestion in 1930 that maggots might actually contribute to the healing of wounds. Needless to say, the use of maggots for treatment has now proved to be untenable.

Writing to me again from Leningrad in 1936, on the 18th of April Professor Novotelnov said:

> I am very glad to hear that your method has found such a widespread application in the different countries of the world. After the publication of my articles here recommending your method, many surgeons practically realized the value of it, as for example Professor Burdenko of Moscow and Professor Fridland of Khasan and others.

Dr. Novotelnov accepted my invitation to attend the meeting of the American Orthopedic Association in Lincoln in 1937 but was unable to make the journey. Any one who reads my papers on this subject will remember that I have made numerous acknowledgments to John Hilton, Lord Lister, Hugh Owen Thomas, Dr. John Ridlon of Chicago and others for their teachings as to the importance of restoration of correct position, immobilization in plaster of paris casts and infrequent dressings. It is this program of good surgery from beginning to end that constitutes the method. That other surgeons have made suggestions along this line during the history of surgery goes without saying. Pirogov was a great surgeon, perhaps the greatest that Russia has produced, and I am glad to make my acknowledgement to him along with others who have assisted us in developing the best methods for gunshot wounds and fractures in the surgery of the present time.

H. WINNETT ORR, M.D., Lincoln, Neb.

MISS ELIZABETH KENNY'S BOOK ON "THE TREATMENT OF INFANTILE PARALYSIS IN THE ACUTE STAGE"

To the Editor:—THE JOURNAL published recently a review of a book by Miss Elizabeth Kenny entitled "The Treatment of Infantile Paralysis in the Acute Stage." The book is not easy to read or easy to understand and contains much controversial material. During 1941 I used the Kenny treatment as far as it was possible in the hospitals to which my patients were admitted. I am convinced that this is the best treatment for the victims of infantile paralysis during the early postparalytic period. Regardless of the confusion occasioned by the theory as outlined by Miss Kenny, the method is definitely good. Not only do I believe that this is true of the hot moist fomentations which are used twelve hours each day on patients who have had the disease but I believe that the muscle training program carried out by workers trained by Miss Kenny represents the best type of physical therapy which I have yet seen used in the after-care of patients with infantile paralysis.

I have been favorably impressed by the fact that in her work in Minneapolis not one single curvature of the spine has developed, even though many of these patients are ambulatory and are not wearing and have not worn braces to support the spine.

EDWARD L. COMPERE, M.D., Chicago.

THE GRAYING OF HAIR

To the Editor:—On numerous recent occasions the subject of gray hair and the possible effects on it of various vitamins or other chemical substances have been dealt with more or less in scientific and medical literature, including THE JOURNAL (January 24, p. 302); but so far as I am aware not one of the writers has attempted to explain to himself and others what gray hair really means and how it could possibly be affected.

It may seem elementary, but it might be useful to ask ourselves just what is hair and what are its functions?

These queries might seem to be adequately answered by the statement that hair is an appendage of the skin and serves for protection of the surface of the body. But this is not the whole story. The hair, collectively, is not a mere appendage of the skin but also a form of an "organ" serving various purposes besides mere passive protection. It aids in cutaneous sensitiveness; on the head and face it has also esthetic and sex significance; and in general, through its pigment, it is a fairly important means of elimination of by-products of metabolism.

Enlarge the hair a thousand times and it will be seen to contain a great many grains of melanin, which directly or indirectly have been abstracted by it from the blood. Make a count of the hair that man cuts and loses during his life—the material thus eliminated will assume a respectable proportion.

The ordinary graying of hair signifies not that the melanin is changing in or losing color but that less and less of it is formed and hence present. The thoroughly "gray" or white hair is that which is entirely free from all melanin. Now it is quite conceivable that under starvation or prolonged severe nervous stresses the production of melanin, and hence its elimination, may be diminished or even cease and that when conditions are restored to normal the formation and elimination of the substance through the hair recommence, as had evidently taken place in the case of Major Greely. A really sudden grayness, however, would seem impossible, for the melanin is dead and inert and cannot possibly be decolored by any mental effect. If sudden graying is a reality, which has not yet been scientifically established, then the loss of color must be due to other factors—perhaps the sometimes suggested bubbles of gas in the medulla of the hair.

If the hair and its "pigment" are viewed in this manner and the normal graying is regarded as a gradual decline in the production of melanin, it is difficult to see how any vitamin or other substance given to the subject could restore former conditions. Something of this nature could conceivably be possible for a time in the early stages of the process but would steadily grow more difficult with time until it became impossible. It would be in vain, it would appear, to expect now or in the future more from drugs or other substances than a possible delay of graying, or a partial halting of the process, with perhaps moderate restoration for a time, during the earlier stages of the graying period.

ALEŠ HRDLIČKA, M.D., Washington, D. C.
Curator, Division of Physical Anthropology,
Smithsonian Institution.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

UNITED STATES PUBLIC HEALTH SERVICE

Examination. Assistant Surgeon (medical only), commissioned corps. Examinations will be held as follows:

U. S. P. H. S. Hospital, Fort Worth, Texas.....March 27
U. S. Marine Hospital, New Orleans.....March 30
Liaison Office, U. S. P. H. S., Room 319, Grant Bldg., Atlanta, Ga. .....March 31

Apply Surgeon General, U. S. P. H. S., Washington, D. C.

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, March 7, page 839.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, June 16-18. Acting Sec., Dr. B. F. Austin, 519 Dexter Ave., Montgomery.

ARIZONA: * Phoenix, April 7-8. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

ARKANSAS: * *Medical.* Little Rock, June 4-5. Sec., Dr. D. L. Owens, Harrison. *Eclectic.* Little Rock, June 4-5. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Written.* San Francisco, June 29-July 2. *Oral examination* (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), San Francisco, March 18. Sec., Dr. Charles B. Pinkham, 1020 N St., Sacramento.

COLORADO: * *Endorsement.* Denver, April 7. *Examination.* Denver, April 8-10. Application must be on file not later than March 21. Sec., Dr. George R. Buck, 831 Republic Bldg., Denver.

CONNECTICUT: * *Endorsement.* Hartford, March 24. Sec. to the Board, Dr. Creighton Barker, 258 Church St., New Haven.

DELAWARE: Dover, July 14-16. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

FLORIDA: * Jacksonville, June 22-23. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, June. Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

ILLINOIS: Chicago, April 7-9. Superintendent of Registration, Mr. Philip M. Harman, Department of Registration and Education, Springfield.

INDIANA: Indianapolis, June 16-18. Sec., Board of Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

KANSAS: Kansas City, June 2-3. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

KENTUCKY: Louisville, May 27-29. Sec., State Board of Health, Dr. A. T. McCormack, 620 S. Third St., Louisville.

MARYLAND: *Medical.* Baltimore, June 9-12. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic.* Baltimore, June 16-17. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MICHIGAN: * Ann Arbor and Detroit, June 10-12. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-4 Hollister Bldg., Lansing.

MINNESOTA: * Minneapolis, April 21-23. Sec., Dr. Julian F. Du Bois, 230 Lowry Medical Arts Bldg., St. Paul.

MISSISSIPPI: Jackson, June. Assistant Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MONTANA: Helena, April 7-8. Sec., Dr. Otto G. Klein, First National Bank Bldg., Helena.

NEVADA: *Written.* May 4. Reciprocity with oral examination, May 4. Applications must be on file not later than April 20. Sec., Dr. Frederick M. Anderson, 215 N. Carson St., Carson City.

NEW JERSEY: Trenton, June 16-17. Sec., Dr. Earl S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: * Santa Fe, April 13-14. Sec., Dr. Le Grand Ward 135 Sena Plaza, Santa Fe.

NORTH CAROLINA: Raleigh, June 15. Sec., Dr. W. D. James, Hamlet.

NORTH DAKOTA: Grand Forks, July 7-10. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OHIO: *Endorsement.* April 7. *Written.* Columbus, June. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: * Oklahoma City, June 10-11. Sec., Dr. James D. Osborn, Jr., Frederick.

OREGON: * Portland, April 7. Exec. Sec., Miss Lorienne M. Conlee, 608 Failing Bldg., Portland.

PENNSYLVANIA: Philadelphia and Pittsburgh, July. Act. Sec., Bureau of Professional Licensing, Mrs. Marguerite G. Steiner, 358 Education Bldg., Harrisburg.

RHODE ISLAND: * Providence, April 2-3. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: Columbia, June 22-24. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

TENNESSEE: Memphis, March 25-28. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.

TEXAS: Galveston, March 23-25. Sec., Dr. T. J. Crowe, 918-20 Texas Bank Bldg., Dallas.

UTAH: Salt Lake City, June 29-30. Assistant Dir., Department of Registration, Mr. G. V. Billings, 324 State Capitol Bldg., Salt Lake City.

VIRGINIA: Richmond, June 17-20. Sec., Dr. J. W. Preston, 30½ Franklin Rd., Roanoke.

WISCONSIN: * Milwaukee, June 30-July 3. Sec., Dr. H. W. Shutter, 425 E. Wisconsin Ave., Milwaukee.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA: Tucson, March 17. Sec., Mr. Franklin E. Roach, Science Hall, University of Arizona, Tucson.

DISTRICT OF COLUMBIA: Washington, April 20-21. Sec., Commission on Licensure, Dr. George C. Ruhland, 6150 E. Municipal Bldg., Washington.

FLORIDA: Gainesville, June 8. Sec., Professor J. F. Conn, John B. Stetson University, De Land.

IOWA: Des Moines, April 14. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MINNESOTA: Minneapolis, April 7-8. Sec., Dr. J. C. McKinley, 126 Millard Hall, University of Minnesota, Minneapolis.

NEBRASKA: Omaha, May 5-6. Dir., Bureau of Examining Boards, Mrs. Jeannette Crawford, 1009 State Capitol Bldg., Lincoln.

OKLAHOMA: Oklahoma City, May 15. Sec., Dr. Oscar C. Newman, Shattuck.

OREGON: Corvallis, July 11. Sec., Mr. Charles D. Byrne, University of Oregon, Eugene.

SOUTH DAKOTA: Vermillion, June 5-6. Sec., Dr. G. M. Evans, Yankton.

WISCONSIN: Madison, April 11. Sec., Prof. Robert N. Bauer, 152 W. Wisconsin Ave., Milwaukee.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Practice Acts: Refusal to Enjoin Licensing Board from Holding Hearing in Revocation Proceeding.—The medical practice act of Arkansas authorizes the appropriate board of medical examiners to revoke a license to practice for, among other things, "The representation to the board of any license, certificate or diploma which was illegally or fraudulently obtained, or the practice of fraud or deception in passing the examination." Proceedings were instituted before the eclectic state medical board of Arkansas to revoke the license of Orville Lentz Beatty, who at the time was chief of the Baker Hospital at Eureka Springs, Ark., on the charge that prior to being licensed after examination by that board in 1929 he had falsely represented to the board that he had attended the Kansas City College of Medicine and Surgery, Kansas City, Mo., during the school years 1923 to 1926, inclusive; that the diploma he represented as having obtained from that school was illegally and fraudulently obtained, and that the license issued to Beatty by the board was obtained by fraud and deception. A date was set for a hearing on the charges and appropriate notice was served on Beatty. Prior to the hearing, however, Beatty filed a bill of complaint in the Pulaski chancery court to enjoin the board from proceeding further in the matter, alleging, among other things, that he had graduated from the American Medical University of Kansas City, Mo., which was recognized and approved as a medical school in good standing by the board when he was licensed by it in 1929, that the law under which the board was proceeding against him was so vague, indefinite and uncertain as to be invalid, and that the charges preferred against him were so vague and uncertain as to prevent him from preparing a defense. The trial court issued a temporary order restraining the board from proceeding further, and later, after overruling a demurrer interposed by the board, made its restraining order permanent. The board then appealed to the Supreme Court of Arkansas.

Beatty contended that by the demurrer the board admitted the truth of the allegations in his bill of complaint and, the facts being taken as true, the board could not now claim that it had any legal authority to revoke his license. We think, said the Supreme Court, that the effect of the demurrer in this case was to admit the truth of well pleaded facts only for the purpose for which the demurrer was filed in the chancery court and does not have the effect contended for by Beatty. Nor is there any merit in another contention of Beatty's that to revoke his license would be a violation of the fourteenth amendment to the federal constitution. The practice of medicine is not a vested right but is merely a privilege, and the right to practice medicine and surgery in Arkansas is not such a right that, when and if revoked as provided by law, the fourteenth amendment of the federal constitution would be violated.

In answer to another contention of Beatty's that the charges against him in the complaint filed with the board were so vague and indefinite that they did not constitute proper notice to him to enable him properly to prepare his defense, the Court thought it sufficient to observe that it is generally held that charges preferred against one before administrative boards are generally not required to be as specifically set forth as in pleadings in courts. As was said by the Supreme Court of Oklahoma in *Freeman* v. *State Board,* 54 Okla. 531, 154 P. 56:

> A complaint filed before a state board of health for the purpose of revoking the license of a physician is sufficient if it informs the accused not only of the nature of the wrong charged, but of the particular instances of its alleged perpetration.

The Court next dismissed as untenable a contention by Beatty that the present members of the eclectic board had no right to review the proceedings of a board composed of different members at the time he was licensed and that the present board had no power to review the issuance of a license granted by former members of the board.

Beatty next contended that even if the law under which the revocation proceedings were invoked is not void for uncertainty but is valid, and even if it should be held that the charges in the complaint to revoke his license were sufficiently definite and alleged facts which the law authorized as a ground for revocation, still the board should not be permitted to proceed against him because it is estopped by laches, that is, because it had waited nine or ten years to start proceedings to revoke his license on grounds which, if they existed at all, existed at the time he was licensed. We cannot agree, said the Court, with this contention. A part of the allegations of the complaint was that Beatty's diploma was illegally and fraudulently obtained and that the license issued to him by the board was obtained by fraud and deception. Since it is claimed that Beatty was guilty of fraud not only in obtaining his diploma but also in obtaining his license to practice in Arkansas, we think the board would have the right to proceed after the fraud, if any, had been discovered. As the basis for this holding the Court referred to *Cunningham* v. *State,* Tex. Civ. App., 79 S. W. (2d) 180, in which the court of civil appeals of Texas said:

> The question was whether it [the license] had been fraudulently obtained, and the allegation that it was procured by a series of fraudulent acts, continuing from the present time back to the original act, was sufficient. A privilege such as this, conceived in fraud and procured by fraud, cannot be raised, by continued fraudulent devices, to the dignity of a vested right, and the state may properly invoke the aid of the courts in withdrawing the privilege at any time the fraud is uncovered.

The Court also adverted to *State Board of Health* v. *Roy,* 22 R. I. 538, 48 A. 802, in which the court held that where one obtains a license from a state medical board by false or fraudulent representations, it is a continuing offense and that every time such a person undertakes to practice under his license he keeps up and continues the fraud initiated when he obtained by false representations his pretended authority to practice.

We have concluded, said the Court, that the jurisdiction to hear evidence and to revoke or refuse to revoke the license of Beatty was vested by law in the eclectic state medical board, and the trial court was without jurisdiction, under the pleadings in this case, to enjoin the board from hearing and determining this question. Beatty alleged in his bill of complaint that the medical board would not give him a fair and impartial hearing and would revoke his license regardless of the law or the facts in evidence. If a hearing is had by the board which results in the revocation of Beatty's license and he believes that the action of the board is arbitrary and illegal, he then has the legal right to have the board's actions reviewed by this Court.

The Supreme Court accordingly reversed the action of the trial court restraining the board from proceeding in the revocation matter and ordered the dismissal of Beatty's bill of complaint.—*Eclectic State Medical Board v. Beatty, 156 S. W. (2d) 246 (Ark., 1941).*

Privileged Communications: Disclosures Made Under Compulsion of Court Order.—The plaintiff's left eye became defective and he consulted the defendant physician in October 1938. The defendant examined the eye, took a history of the plaintiff's trouble and prescribed a course of treatment. About a month later, following an accident, the plaintiff lost the sight in his left eye. At that time, the plaintiff was insured under an accident insurance policy by the terms of which the company agreed to pay a certain amount in the event that he lost the sight of either eye through any kind of an accident. In a suit against the insurance company to collect under the policy the defendant physician testified as a witness on behalf of the company, and the judgment was against the plaintiff. Later the plaintiff sued the defendant physician for damages alleged to have resulted from the defendant having testified in the prior suit. From a judgment for the defendant, the plaintiff appealed to the Court of Appeals of Kentucky.

The plaintiff contended that by testifying in the previous suit the defendant physician divulged confidential information obtained in a professional capacity which was privileged and that he, the plaintiff, had not waived the privilege. The plaintiff further alleged that it was because of the defendant's testimony that the plaintiff lost his suit against the insurance company. To sustain his cause of action, the plaintiff relied on section 2062a-24 of the Kentucky statutes, which provides "For the purpose of this act, and all other matter, the confidential relations and communications between physician and patient are placed upon the same basis as those provided by law between attorney and client, and nothing in this shall be so construed as to require any such privileged communication to be disclosed." This section was a part of the Vital Statistics Act, which provided, according to its title, for the registration and certification of births and deaths, the granting of burial or removal permits and the reporting of morbidity statistics.

The defendant physician first contended that section 2062a-24 was not germane to the title of the Vital Statistics Act and was therefore invalid under section 51 of the Kentucky Constitution providing that "No law enacted by the general assembly shall relate to more than one subject, and that shall be expressed in the title, . . ." The Court held, however, that the section was applicable only to transactions coming within the purview of the Bureau of Vital Statistics. Continuing, the Court said that at common law neither the physician nor the patient could claim the privilege of refusing to testify with respect to confidential communications and that since in Kentucky there was no statutory privilege other than that created by section 2062a-24, the common law rule still obtained.

The defendant physician also contended that, even though section 2062a-24 should be held valid, he was still not liable because he was compelled by the court, under penalty of contempt, to give the testimony. The evidence showed that the defendant physician had apparently been a witness for the insurance company in response to a subpoena. At the trial, timely objection by the plaintiff's counsel had been made to the proffered testimony. The objection was overruled and the defendant was required by the court to testify. Had he declined or refused to comply with the court's ruling he would have been in contempt and subject to the penalty provided in such instances. The Court of Appeals, therefore, concluded that the defendant physician acted under compulsion as directed by the court and that to hold him liable for his acts under those circumstances would be contrary to public policy. If we should hold to the contrary, explained the Court of Appeals, witnesses in all cases would find themselves facing civil liability if they should answer a question objected to, and criminal liability if they should refuse. Thus an inducement would be thrown out to the witness to swear falsely or at least to testify in a capitulatory, vague or indefinite manner, hiding the truth, hampering the court and thwarting justice.

The judgment for the defendant physician was accordingly affirmed.—*Boyd v. Wynn, 150 S. W. (2d) 648 (Ky., 1941).*

Society Proceedings

COMING MEETINGS

Alabama, Medical Association of the State of, Montgomery, Apr. 21-23. Dr. D. L. Cannon, 519 Dexter Avenue, Montgomery, Secretary.

American Association of Anatomists, New York, April 1-3. Dr. Eliot R. Clark, Dept. of Anatomy, University of Pennsylvania School of Medicine, Philadelphia, Secretary.

American Association of Industrial Physicians and Surgeons, Cincinnati, Apr. 13-17. Dr. Edward C. Holmblad, 28 East Jackson Blvd., Chicago, Managing Director.

American Association of Pathologists and Bacteriologists, St. Louis, April 2-3. Dr. Howard T. Karsner, 2085 Adelbert Rd., Cleveland, Secretary.

American Association of the History of Medicine, Atlantic City, N. J., May 3-5. Dr. Henry E. Sigerist, 1900 East Monument St., Baltimore, Secretary.

American College of Physicians, St. Paul, Apr. 20-24. Mr. E. R. Loveland, 4200 Pine St., Philadelphia, Executive Secretary.

American Federation for Clinical Research, Minneapolis, Apr. 20-21. Dr. Thomas M. Durant, 3401 North Broad St., Philadelphia, Secretary.

American Pediatric Society, Sky Top, Pa., Apr. 30-May 2. Dr. Hugh McCulloch, 325 North Euclid Ave., St. Louis, Secretary.

American Physiological Society, Boston, March 30-April 4. Dr. Carl J. Wiggers, 2109 Adelbert Rd., Cleveland, Secretary.

American Society for Clinical Investigation, Atlantic City, N. J., May 4. Dr. Eugene M. Landis, University of Virginia Hospital, Charlottesville, Va., Secretary.

American Society for Experimental Pathology, Boston, April 1-3. Dr. Harry P. Smith, Medical Laboratory Bldg., Iowa City, Secretary.

American Society for Pharmacology and Experimental Therapeutics, Boston, March 31-April 4. Dr. Raymond N. Bieter, University of Minnesota Medical School, Minneapolis, Secretary.

American Society of Biological Chemists, Boston, Apr. 7. Dr. A. K. Balls, Bureau of Agricultural and Engineering Chemistry, Washington, D. C., Secretary.

American Surgical Association, New Orleans, Apr. 6-8. Dr. Charles G. Mixter, 319 Longwood Ave., Boston, Secretary.

Arkansas Medical Society, Hot Springs National Park, Apr. 27-29. Dr. W. R. Brooksher, 602 Garrison Ave., Fort Smith, Secretary.

Association of American Physicians, Atlantic City, May 5-6. Dr. Hugh J. Morgan, Vanderbilt University Hospital, Nashville, Tenn., Secretary.

California Medical Association, Del Monte, May 4-7. Dr. George H. Kress, 450 Sutter St., San Francisco, Secretary.

Federation of American Societies for Experimental Biology, Boston, March 31-April 4. Dr. D. R. Hooker, 19 West Chase, St., Baltimore, Secretary.

Florida Medical Association, Palm Beach, Apr. 13-15. Dr. Shaler Richardson, 111 West Adams St., Jacksonville, Secretary.

Georgia, Medical Association of, Augusta, Apr. 28-May 1. Dr. E. D. Shanks, 478 Peachtree St. N.E., Atlanta, Secretary.

Iowa State Medical Society, Des Moines, Apr. 15-17. Dr. Robert L. Parker, 3510 Sixth Ave., Des Moines, Secretary.

Louisiana State Medical Society, New Orleans, Apr. 27-29. Dr. P. T. Talbot, 1430 Tulane Ave., New Orleans, Secretary.

Maryland, Medical and Chirurgical Faculty of, Baltimore, Apr. 28-30. Dr. Richard T. Shackelford, 1211 Cathedral St., Baltimore, Secretary.

Medical Library Association, New Orleans, May 7-9. Miss Anna C. Holt, 25 Shattuck St., Boston, Secretary.

Missouri State Medical Association, Kansas City, Apr. 27-29. Mr. E. H. Bartelsmeyer, 634 North Grand Blvd., St. Louis, Executive Secretary.

National Tuberculosis Association, Philadelphia, May 6-9. Dr. Charles J. Hatfield, 1790 Broadway, New York, Secretary.

Nebraska State Medical Association, Omaha, May 4-7. Dr. R. B. Adams, 416 Federal Securities Bldg., Lincoln, Secretary.

New Jersey, Medical Society of, Atlantic City, Apr. 21-23. Dr. Alfred Stahl, 55 Lincoln Park, Newark, Secretary.

New York, Medical Society of the State of, New York, Apr. 27-30. Dr. Peter Irving, 292 Madison Ave., New York, Secretary.

Ohio State Medical Association, Columbus, Apr. 28-30. Mr. C. S. Nelson, 79 East State St., Columbus, Executive Secretary.

Oklahoma State Medical Association, Tulsa, Apr. 29-May 1. Mr. R. H. Graham, 210 Plaza Court Bldg., Oklahoma City, Executive Secretary.

Tennessee State Medical Association, Memphis, Apr. 14-16. Dr. H. H. Shoulders, 706 Church St., Nashville, Secretary.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

22:719-870 (Dec.) 1941

*Intermittent Claudication as Result of Arterial Spasm Induced by Walking. W. V. Leary and E. V. Allen, Rochester, Minn.—p. 719.
Systolic Gallop Rhythm. S. Hinohara, Kyoto, Japan.—p. 726.
Estimation of Cardiac Output from Blood Pressure and Pulse Wave Velocity Measurements on Subjects with Cardiovascular Disease: I. Cardiovascular Disease Other Than Aortic Regurgitation. H. C. Bazett, L. B. Laplace and J. C. Scott, Philadelphia.—p. 737.
Id.: II. Aortic Regurgitation. H. C. Bazett, L. B. Laplace and J. C. Scott, Philadelphia.—p. 749.
*Record Case of Tetralogy of Fallot, with Comments on Metabolic and Pathologic Studies. J. H. Talbott, F. S. Coombs, B. Castleman, F. L. Chamberlain, W. V. Consolazio and P. D. White, Boston.—p. 754.
Distribution of Surface Potential on Chest in Intraventricular Block. A. Bohning, L. N. Katz and R. Langendorf, Chicago.—p. 778.
Changes in Form of Beating Mammalian Heart, as Demonstrated by High Speed Photography. H. B. Burchell, Rochester, Minn., and M. B. Visscher, Minneapolis.—p. 794.
Electrocardiogram in Induced Fever. P. T. Knies, Columbus, Ohio.—p. 804.
Myocardial Degeneration with Hypertrophy and Failure of Unknown Cause. J. A. Reisinger and B. Blumenthal, Washington, D. C.—p. 811.
Syndrome Due to Occlusion of All Arteries Arising from Aortic Arch: Report of Case Featured by Primary Thrombocytosis and Autohemagglutination. P. M. Aggeler, S. P. Lucia and J. H. Thompson, San Francisco.—p. 825.
*Passage of Hollow Needle into Venous Blood Stream to Heart, Through Cardiac Wall and into Thorax: Report of Case. S. Shapiro, New York.—p. 835.

Intermittent Claudication Induced by Walking.—Leary and Allen report 4 cases in which intermittent claudication as a result of arterial spasm was induced by exercise. The distress was the result of a diminished flow of blood to the extremities. The decrease definitely resulted from spasm of arteries, which is difficult to explain, for the usual arterial response to exercise is dilatation. Systolic bruits were heard over the abdominal aorta in 2 cases. Such bruits should suggest arterial disease. Calcification was revealed in the roentgenograms of the abdominal aorta in these 2 cases. The murmurs were similar to those produced by aneurysms. The circulatory disturbance was caused by an aneurysm, but how the disturbance was provoked remains unexplained. The other 2 patients had had thrombophlebitis and chronic venous insufficiency. It seemed probable that the residue of acute thrombophlebitis produced a "reverse sensitivity" of the arteries, so that they contracted, instead of dilating, when the patient exercised. The exact explanation remains obscure, although the clinical facts are impressive. When a patient relates a conclusive history of intermittent claudication, occlusive arterial disease is not excluded but the arterial pulsations must be studied before and after exercise. If evidence of a paradoxic reaction of the arteries is present, localized obliteration of the smaller arteries, as described by Veal, must be considered.

Tetralogy of Fallot.—Talbott and his colleagues report the clinical, metabolic and pathologic data on a youth of 19 with congenital heart disease presenting the tetralogy of Fallot. Postmortem examination confirmed the clinical diagnosis. The patient was first seen at 18, when he stated that his lips had been blue since the age of 2 years. He agreed to participate in a metabolic experiment intended to investigate the effects of prolonged anoxemia at a barometric pressure equivalent to that at sea level. He remained in the research ward for approximately a month. He was readmitted to the hospital on three occasions within one year. Subacute bacterial endocarditis was suspected, though blood cultures showed no growth. A colon bacillus abscess of the cerebrum was immediately responsible for his death. The metabolic investigations revealed a profound variation from the normal in the acid-base equilibrium and changes in renal function. Seventy-five per cent of the blood in the heart chambers was thought to traverse a right to left shunt. The oxygen saturation of the arterial blood varied from 62 to 58 per cent, the oxygen capacity was about 35 volumes per cent and the carbon dioxide content was less than 33 volumes per cent. The arterial p_H of the serum was less than 7.29. A profound, uncompensated acidosis was attributed to the increased concentration of undetermined acids and failure of the respiratory center to maintain the usual balance between free and combined carbon dioxide. The functional renal insufficiency was attributed to anoxemia, venous congestion and acidosis.

Passage of Needle into Blood Stream.—Shapiro reports an instance in which a needle used for an intravenous injection became separated from the hub and entered the blood stream. The patient did not complain of pain or other symptoms. Immediate roentgenograms of the arm and chest failed to reveal the needle. A month later a posteroanterior roentgenogram of the chest revealed a linear shadow corresponding to the dimensions of the lost needle. The needle was lying horizontally at the level of the eighth thoracic vertebra. Fluoroscopy showed that the needle lay outside the heart. It appeared to be embedded in the prepericardial fat between the inferior surface of the apex of the heart and the left dome of the diaphragm. The patient has not had any circulatory, cardiac, pulmonary or pleural complaint. Five subsequent roentgen examinations revealed no change in the position of the needle. The electrocardiograms, blood pressure, heart rate, the size of the heart and the cardiac rhythm have remained normal. Cardiac murmurs have not been heard.

American Journal of Ophthalmology, Cincinnati

24:1349-1474 (Dec.) 1941

Experimental Studies on Vitreous Detachment. L. von Sallmann, New York.—p. 1349.
Gliomas of Retina: Histopathologic Study. Edith M. Parkhill and W. L. Benedict, Rochester, Minn.—p. 1354.
*Cerebral Symptoms Accompanied by Choked Optic Disks in Types of Blood Dyscrasia. C. H. Watkins, H. P. Wagener and R. W. Brown, Rochester, Minn.—p. 1374.
Formalinized Heterogeneous and Homogeneous Corneal Transplantation—Experimental. M. Wiener and H. D. Rosenbaum, St. Louis.—p. 1384.
*Toxic Syndrome of Ocular Tuberculosis. C. Charlin, Santiago, Chile, translated by F. A. Wies, New Haven, Conn.—p. 1392.
Value of Gonioscopy in Prognosis and Treatment of Glaucoma. M. U. Troncoso, New York.—p. 1396.
Autofundoscopy (Autoretinovasoentoscopy; Auto-Ophthalmoscopy of Eber; Purkinje Figure of Walker). L. C. Drews, St. Louis.—p. 1403.
Orthoptic Training and Surgical Correction of Strabismus: Comparative Study of Binocular Vision in 324 Surgical Cases With and Without Orthoptic Training. C. Berens, A. J. Elliot and Lucille Sobacke, New York.—p. 1418.
Exophthalmos: First Manifestation of Thyrotoxicosis. E. E. Covitz, Boston.—p. 1423.

Choked Disk in Blood Dyscrasias.—Watkins and his colleagues encountered papilledema of the type usually designated as "choked disk" in 4 patients with various types of blood dyscrasia, but there was no clinical related intracranial pathologic process or involvement, nor was such involvement observed at the necropsy of 2 of the patients. Three of the patients presented the picture of thrombocytopenic purpura and 1 that of recurrent severe hemorrhage from a gastric ulcer. It is suggested that the papilledema was produced by essentially the same mechanism in the 4 patients: a local reaction of the tissues of the optic nerves to the anoxemia resulting from the loss of blood. Cerebral edema from loss of blood may at times be a factor in the development of papilledema and of paralysis of the lateral rectus muscles in such cases.

Toxic Syndrome of Ocular Tuberculosis.—Charlín observed that not only will the patient with an ocular lesion sensitive to tuberculin treatment see better after therapy but his appetite, sleep, energy, weight and general health will improve. He has noticed that such lesions are accompanied by headaches, anorexia, gastrointestinal changes, insomnia, somnolence, asthenia and loss of weight and in certain women also by dysmenorrhea, night sweats, fever and an appearance of illness. In other words, these ocular lesions sensitive to tuberculin were accompanied by a toxic syndrome. This toxic syndrome, with parallel development, changed with the ocular disease. If under tuberculin therapy the ocular disorder improved the general

condition or toxic syndrome improved. A relation between the two pathologic phenomena seemed inescapable, and clinically the author accepted a priori that the two were the result of a common cause.

Archives of Physical Therapy, Chicago

22:707-770 (Dec.) 1941

Internal Radiant Heat in Lesions of Pelvis. B. N. Bengtson, Maywood, Ill.—p. 711.
Active Exercise in Fracture Treatment. R. H. Kennedy, New York.—p. 720.
Physical Measures in Rehabilitation. C. R. Brooke, Newark, N. J.—p. 724.
Evaluation of Short Wave Diathermy. R. Kovács, New York.—p. 732.

Bulletin New York Academy of Medicine, New York

18:1-80 (Jan.) 1942

Basic Hemodynamic Principles Essential to Interpretation of Cardiovascular Disorders. C. J. Wiggers, Cleveland.—p. 3.
Heart Failure. P. D. White, Boston.—p. 18.
Arteriosclerosis: Social Significance and Recent Advances in Treatment. G. M. Piersol, Philadelphia.—p. 36.
Recent Studies in Production of Cancer by Chemical Compounds: Conditioned Deficiency as Mechanism. C. P. Rhoads, New York.—p. 53.
History of Fever Therapy in Treatment of Disease. W. Bierman, New York.—p. 65.

Canadian Medical Association Journal, Montreal

45:479-584 (Dec.) 1941

*Mechanism of Cross Infection of Wounds in Hospital by Hemolytic Streptococci. Reba E. Willits and R. Hare, Toronto.—p. 479.
Jaundice as the Pediatrician Sees It. R. McIntosh, New York.—p. 488.
Treatment of Hydronephrosis Secondary to Aberrant Renal Vessels. F. S. Patch and J. T. Codnere, Montreal.—p. 495.
Surgical Treatment of Strabismus. A. L. Morgan, Toronto.—p. 500.
Radiologic Consideration of Coarctation of Aorta (Adult Type). C. L. Ash, Toronto.—p. 505.
Chemotherapy of Meningococcic Meningitis. H. Little, London, Ont.—p. 509.
Relation of Arteriosclerosis and Arterial Hypertension to Mental Disorder. K. Stern, Verdun, Que.—p. 513.
Problems of Army Hygiene. M. R. Elliott, Wolfville, N. S.—p. 517.
Management of Carcinoma of Cervix Uteri. B. R. Mooney, Winnipeg, Man.—p. 521.
Review of Thoracoplasties in Saskatchewan. W. S. Barclay, Saskatoon, Sask.—p. 525.
*Obliterative Vascular Disease: Treatment by Sympathectomy. R. I. Harris, Toronto.—p. 529.
Fetal Shock: Treatment with Desoxycorticosterone Acetate (Preliminary Report). M. Berlind, Brooklyn.—p. 534.
Local Anesthesia in Obstetrics. N. W. Philpott, Montreal.—p. 539.
Use of Vitamin P in Edema of Pregnancy Toxemia. E. Shute, London, Ont.—p. 542.
Natural History of Migraine. J. W. Scott, Edmonton, Alta.—p. 543.

Mechanism of Cross Infection of Wounds.—Willits and Hare state that the skin, bedding and surroundings of patients with infected wounds harbor hemolytic streptococci. Therefore the chances of conveying infection by the hands or by instruments handled by the personnel are by far greater than is usually supposed. The air around patients, even those with small wounds, may be polluted, and thus air borne infection is possible. That the margin of safety of the ward infection of wounds is extremely narrow is demonstrated by the increase in the amount of sepsis that occurs in war time when wards are crowded and poorly ventilated and when the personnel is overworked. The margin of safety is narrow because the entire contents of the bed of a patient with an infected wound and the patient himself may be potentially infective for other patients. The infectivity does not cease at the periphery of the bed; it extends as a miasma in the air around and about it. Thus infection may be transmitted not only by air currents but also by the hands of the personnel who touch the bedclothes, bathe the patient and dress his wound and without washing their hands attend an uninfected wound. Even the outer layers of the dressings may be contaminated. The obvious inference is that a patient with an infected wound should not remain in the same ward with patients with clean, uninfected wounds. Transfer of infection from patient to patient seldom occurs during peace time, but with the almost inevitable hurry and overcrowding in war time the barriers break down. The suggestions for minimizing cross infections are provision of a wing for all patients with any sign of infection, the division of the nursing and surgical staffs so that no one attending a patient with an infected wound will come in contact with a patient with a clean wound, and the segregation and bacteriologic control of all patients and personnel with nasopharyngeal infection. Alternative measures (the treatment of bedding with liquid petrolatum, the oiling of floors and the ultraviolet irradiation of wards) seem to be too elaborate for general adoption, particularly during war time. Furthermore, under the stress of warfare these measures might break down.

Sympathectomy for Vascular Disease.—Harris believes that conservative measures are to be employed in all early cases. Lumbar sympathectomy should be considered when severe intermittent claudication is constant, when pain is present during rest and when trophic changes or impending gangrene appears. Success is possible when the existing degree of vasospasm superimposed on the obliterative vascular disease can be abolished by the operation. Even when the Landis test and spinal anesthesia show little or no vasospasm, some benefit often follows sympathectomy. If these tests show that the cutaneous temperature of the foot rises 5.4 degrees F., a good result from lumbar sympathectomy can be predicted. When the rise of temperature is less than this sympathectomy is probably still justified, for even if only pain during rest is relieved the result is worth while, as amputation is avoided or postponed. Sympathectomy should be performed before gangrene and open trophic lesions have developed. Sympathectomy should be considered for every patient with severe Buerger's disease. The situation is different in peripheral arteriosclerosis, as patients with this disease are old and usually past the wage earning period. Moreover, with their vascular disease serious vascular lesions in various organs—the brain, the heart and the kidney—may exist. Only patients with peripheral arteriosclerosis who have no organic disease or serious vascular disease elsewhere and whose life cannot be slowed down to a tempo within the boundaries of their circulatory sufficiency are suitable for the procedure. During the last ten years at the Toronto General Hospital sympathectomy has been performed for 39 patients with vascular disease. Of 2 patients with Raynaud's disease the result was good in 1 and poor in the other; a young woman with an obscure vascular lesion experienced a good result; the result was good in 5, fair in 1 and poor in 7 of the 13 patients with arteriosclerosis, and of the 23 with Buerger's disease the result was good in 13, fair in 7 and poor in 3. A good result was sustained relief from pain and intermittent claudication and ability to work. A fair result was slight or moderate improvement in circulation, unsustained but pronounced relief from pain or relapse with gangrene after a period of relief. Little or no improvement following sympathectomy was considered a poor result.

Cancer Research, Baltimore

1:919-1018 (Dec.) 1941

Experimental Brain Tumors: I. Tumors Produced with Methylcholanthrene. H. M. Zimmerman and Hildegarde Arnold, New Haven, Conn.—p. 919.
Comparison of Methyl Salicylate and Benzene as Solvents for Methylcholanthrene. W. J. Burdette and L. C. Strong, New Haven, Conn.—p. 939.
Comparison of Methylcholanthrene Hyperplastic Epidermis with Benign Hyperplastic Epidermis in Healing Wounds. F. X. Paletta, E. V. Cowdry and C. E. Lischer, St. Louis.—p. 942.
Chemical Configuration and Carcinogenesis. C. E. Dunlap and S. Warren, Boston.—p. 953.
Occurrence in Whole Blood of Material Influencing Incidence of Mammary Carcinoma in Mice. G. W. Woolley, L. W. Law and C. C. Little, Bar Harbor, Maine.—p. 955.
Experimental Studies on Genetics of Spontaneous Leukemia in Mice. R. K. Cole, Ithaca, N. Y., and J. Furth, New York.—p. 957.
Effect of Colchicine on Mitotic Activity of Brown-Pearce Rabbit Epithelioma. B. DuBilier and S. L. Warren, Rochester, N. Y.—p. 966.
Steroid Excretion in Cancerous and Noncancerous Persons: II. Urinary Estrogens. G. Pincus and W. H. Pearlman, Worcester, Mass.—p. 970.

Illinois Medical Journal, Chicago

80:437-518 (Dec.) 1941

Recurring or Persistent Giant Urticaria (Angioneurotic Edema). R. F. Farquharson, Toronto, Canada.—p. 454.
Hemolytic Staphylococcus Septicemia. A. G. Wolfe, Jacksonville.—p. 457.
Sterility. W. C. Scrivner, East St. Louis.—p. 462.
Causes and Prevention of Blood Transfusion Reactions. L. M. Zimmerman, Anne Marie Strauss and H. Laufman, Chicago.—p. 466.
Climacteric and Menopause. E. N. Nash, Galesburg.—p. 472.
Physiologic Changes Incident to Puberty. F. T. Jung, Chicago.—p. 477.
Graphic Changes of Coronary Occlusion. J. B. Carter, Chicago.—p. 485.
Problems in Nutrition in Allergy: Report of Case of Optic Neuritis on Allergic Basis. Helen C. Hayden and Beulah Cushman, Chicago.—p. 500.
Cervical Polyps. W. B. Serbin, Chicago.—p. 503.
Meningitis with Diabetic Coma. W. D. McNally, Chicago.—p. 507.

Journal of Clin. Endocrinology, Springfield, Ill.

1:931-1020 (Dec.) 1941

Basal Heat Production in Hypogonadism in Men and Its Increase by Protracted Treatment with Testosterone Propionate. Irene Sandiford, Kathryn Knowlton and A. T. Kenyon, Chicago.—p. 931.
Rapid Growth in Height Produced by Chorionic Gonadotropin in Dwarfed Infantile Identical Twin. G. B. Dorff, New York.—p. 940.
Effect of Pregnancy Urine Hormone and Vitamin B6 on Blood and Bone Marrow Pictures in Primary Erythroblastic Anemia (Cooley). L. M. Goldman and A. Malavazos, Newark, N. J.—p. 945.
Occurrence of Unusual Amounts of Estrogens in Urine of Boys with Progressive Muscular Dystrophy. A. S. Minot, Nashville, Tenn.—p. 949.
Daily Variation in 17-Ketosteroid Excretion of Men and Women. S. C. Werner, New York.—p. 951.
Relation of Arteriosclerosis to Diabetic Neuritis of Lower Extremities. A. J. Kauvar, Boston.—p. 955.
Effects of Large Doses of Intravenous Insulin in Psychotic Non-diabetic Patients. S. M. Horvath and E. Friedman, Boston.—p. 960.
Relative Effectiveness of Several Methods of Administering Desoxycorticosterone Acetate. G. W. Thorn, R. L. Greif, S. O. Coutinho and H. Eisenberg, Baltimore.—p. 967.
Abnormal Suprarenal Discharges in Angina Pectoris and Their Control by X-Ray Therapy. W. Raab, Burlington, Vt.—p. 977.
Therapeutic Use of Estrone Suspensions. S. C. Freed and J. P. Greenhill, Chicago.—p. 983.
Oral Administration of Methyl Testosterone in Gynecology. M. Berlind, Brooklyn.—p. 986.
Patterns of Uterine Motility in Normal Ovulatory and Anovulatory Cycle, After Castration, Coitus and Missed Abortion. W. Bickers and R. J. Main, Richmond, Va.—p. 992.

Journal of Lab. and Clinical Medicine, St. Louis

27:279-418 (Dec.) 1941

Social Revolution and the Physician. W. T. Vaughan, Richmond, Va.—p. 279.
Pharmacology of Thymoxyethyldiethylamine. D. R. Climenko, E. Homburger and F. H. Messer, Rensselaer, N. Y.—p. 289.
*Menopause Arthralgia, with Preliminary Report on Use of Stilbestrol. W. K. Ishmael, Oklahoma City.—p. 297.
Cardiac Depression by Mercurial Diuretics. R. L. Johnston, Cincinnati.—p. 303.
Effect of Supplemental Amylase on Digestion. J. M. Beazell, Chicago.—p. 308.
Experimental Asthma: Treatment with Histaminase. F. L. Neely, New York.—p. 319.
Enteral Absorption of Pollen Antigen. G. E. Rockwell, Cincinnati.—p. 328.
Age Incidence of Positive Tuberculin Reactions (Mantoux). Frances Pascher and M. B. Sulzberger, with statistical analysis by A. S. Wiener, New York.—p. 332.
Question of Protection Against Histamine and Anaphylactic Shock in Guinea Pigs by Histaminase. R. C. Hawes, G. A. Alles and H. Miller, Los Angeles.—p. 337.
Lipomelanotic Reticular Hyperplasia of Lymph Nodes: Report of Case. L. A. Soloff, Philadelphia.—p. 343.

Menopausal Arthralgia.—Ishmael treated women with menopausal arthralgia according to the following plan: 1. A low carbohydrate, high vitamin diet was given to patients who were overweight and a normal, well balanced diet to the others. Traumatic factors (cold, dampness and drafts) were avoided. Foci of infection were left alone during active treatment or while rheumatic symptoms were present. Supplementary vitamins were given patients with clinical deficiency. Metabolism, gastrointestinal function, emotional stress and posture were corrected, and pain was relieved. 2. Specific treatment included administration of estrogenic substances, autohemotherapy and artificial induction of fever. 3. Physical therapy consisted of the local and general application of heat. Except in case of acute arthralgia the application of heat was usually followed by a brief application of cold. 4. Acutely affected areas were supported or immobilized in splints. Of 60 patients given 10,000 units of diethylstilbestrol by injection, 80 per cent had a complete remission, 15 per cent were improved and 5 per cent failed to respond. Of 30 patients given diethylstilbestrol orally 77 per cent had a complete remission, 10 per cent were improved and 13 per cent failed to respond. Thirty patients who had been receiving estrogenic substances were without their knowledge given diethylstilbestrol instead, and of these 82 per cent noticed no change, 15 per cent stated they were better and 3 per cent said the pain was increased. Of 60 patients receiving estrogenic substances by injection 82 per cent have had a complete remission, 10 per cent were improved and 8 per cent failed to improve. Of 34 patients receiving estrogenic substances orally 30 per cent had a remission, 35 per cent were improved and 35 per cent failed to improve. Patients who had a remission of their arthralgia also experienced relief from other menopausal symptoms. It is best to give diethylstilbestrol orally in 0.5 instead of 1 mg. doses.

Journal-Lancet, Minneapolis

61:471-506 (Dec.) 1941

*Evaluation of Vitamin E in Treatment of Multiple Sclerosis and Progressive Muscular Atrophies. R. L. Meller, Minneapolis.—p. 471.
X-Ray Technic. R. G. Allison, Minneapolis.—p. 478.
Oliguria and Hematuria Following Administration of Sulfathiazole and Relieved by Renal Pelvic Lavage: Case Report. N. O. Brink and J. F. Shandorf, Minneapolis.—p. 480.
Diagnosis of Rheumatic Fever. M. J. Shapiro, Minneapolis.—p. 481.
Effect of Gelatin Feeding on Strength and Weight According to Body Build. Helen B. Pryor and Maud L. Knapp, Palo Alto, Calif.—p. 484.
Functional Lighting in College. J. O. Kraehenbuehl, Urbana, Ill.—p. 486.

Vitamin E for Multiple Sclerosis.—Meller studied the effect of vitamin E therapy in 9 patients with amyotrophic lateral sclerosis, 5 with primary muscular atrophy and 12 with multiple sclerosis. The 12 patients with multiple sclerosis experienced no benefit from intensive vitamin E therapy. Of the other 14, 3 apparently recovered, 7 showed definite improvement and 4 obtained no benefit. Large doses given over a long time were required for improvement to ensue. The following daily doses are suggested: 100 mg. of alpha-tocopherol given intramuscularly for six to eight weeks or 150 to 200 mg. of the drug given orally for a similar time. No toxic symptoms attributable to the medication were observed. The evidence suggests that in at least some cases amyotrophic lateral sclerosis and primary muscular atrophy are metabolic or nutritional diseases. One of the apparently recovered patients had hereditary muscular atrophy and thus supports the proposition that hereditary factors do not necessarily preclude recovery or improvement. It is suggested that the terms amyotrophic lateral sclerosis and primary muscular atrophy be replaced by the more descriptive term motor neuronopathy.

Journal of Pediatrics, St. Louis

19:731-880 (Dec.) 1941

The Academy and National Defense. P. M. Stimson, New York.—p. 731.
Need for Efficient Child Health Service in World at War: Lessons from France. H. C. Stuart, Boston.—p. 736.
Children in Defense Program. Martha M. Eliot, Washington, D. C.—p. 740.
Nutrition and War. T. Parran, Washington, D. C.—p. 748.
Pediatrics and Clinical Protection of Child Development. A. Gesell, New Haven, Conn.—p. 755.
*Pyknolepsy: Study of Diagnosis and Prognosis. J. W. Owen and L. Berlinrood, New York.—p. 762.
*Advances in Treatment of Meningitis. A. L. Hoyne, Chicago.—p. 778.
Study of Insulin Tolerance and Glucose Tolerance Tests on Normal Infants. W. A. Daniel Jr., with technical assistance of Josephine Cunningham, Chicago.—p. 789.
Observations on Malformation of Head in Mongoloid Deficiency. C. E. Benda, Wrentham, Mass.—p. 800.
Nonhemolytic Familial Jaundice: Report of Family. H. A. Carithers Jr., New York.—p. 817.
Influenza Meningitis in Seven Month Old Infant. M. Josephi, Julia Mehlman and Dorothy Hager, New York.—p. 823.
Multiple Cystic Tuberculosis of Long Bones. L. K. Sweet and D. J. Abramson, Washington, D. C.—p. 826.
Preventive Aspect of Behavior Problems in Children. H. K. Tenney Jr., Madison, Wis.—p. 833.

Pyknolepsy.—Owen and Berlinrood discuss the diagnostic and prognostic data on the pyknolepsy in the 42 instances of spontaneous cessation of attacks encountered among the 299 cases reported in the literature. The distribution between the sexes was even. The onset was usually between the ages of 2 to 13 years. The attacks ceased between the ages of 5 and 18, with a peak (24 per cent) at 11 years. The duration of the illness was from a few months to ten years, in the largest number of cases lasting two years. The course was generally monotonous; there were occasional attack free periods (varying from an occasional day to three months). The free periods did not recur more than three times in any case. The frequency of attacks varied from one to one hundred and fifty a day, usually from ten to fifty. The duration of the attacks was one second to two minutes, usually ten to twenty seconds. A single attack rarely lasted more than one minute. Generally, consciousness was only partially affected though amnesia was usually complete. Other frequent features of attacks were blinking, upward rolling of the eyes, gross bodily motions and amnesia. The attacks were usually little affected by outside circumstances. They were decreased briefly by phenobarbital,

bromides, suggestion and activity, and occasionally they were increased by fatigue, constipation, climatic changes, phenobarbital, bromides, fear, excitement and anger. The intelligence of the patients was usually high and remained so. A family history of epilepsy was present in 19 per cent. The past history and physical status showed 6 patients to have had an abnormal birth; 4 had a minor neurologic residue and 12 had minor physical defects. Five had had grand mal seizures either in infancy or just before pyknolepsy began, without any evidence of grand mal epilepsy during the course of the pyknolepsy. Only 1 patient had grand mal epilepsy after pyknolepsy began and this for three months just after the pyknolepsy terminated. Patients with the following characteristics have a good chance of spontaneous recovery: onset between the ages of 2 and 13, a fairly monotonous daily frequency, attacks lasting not more than thirty seconds, only partial clouding of the consciousness, attacks that are readily precipitated by hyperpnea, with no reaction to drugs or to emotional situations and without the accompaniment of features of grand mal seizures, such as falling with injury, tongue biting, important vasomotor changes, pulse changes, aura or postattack sensations.

Advances in Treatment of Meningitis.—Hoyne lists among the advances in the treatment of meningitis the discontinuance of intrathecal therapy, the abandonment of frequent lumbar punctures and the introduction of chemotherapy. Among 34 patients with the disease who recovered only 3 received intraspinal therapy. The paucity of lumbar punctures was conspicuous. The author's 3 patients who recovered were treated with sulfapyridine. The goal in the treatment of meningitis in most instances is chemotherapy. For purpuric or other unusually severe forms of the disease it is probably advisable to give large doses of meningococcus antitoxin or standard antimeningococcus serum intravenously in addition to chemotherapy. Sulfanilamide and sulfapyridine are equally effective. Sulfathiazole is also frequently satisfactory. Sulfapyridine is acceptable for any form of meningitis in which there is a chance of a favorable response except for staphylococcic infection. There is still one unyielding form of bacterial meningitis, the tuberculous.

Journal of Thoracic Surgery, St. Louis

11:131-240 (Dec.) 1941

Major Changes in Fundamental Relationships of Respiratory Drive Mechanisms During Evipal and Pentothal Anesthesias, with Special Consideration of Possible Applications to Transpleural Surgery. C. A. Moyer, Boston.—p. 131.
Observations on Effects of Prolonged Administration of High Oxygen Concentration to Dogs. J. R. Paine, D. Lynn and A. Keys, Minneapolis.—p. 151.
Chronic Nontuberculous Empyema. A. O. Singleton and R. M. Moore, Galveston, Texas.—p. 169.
Use of Sulfanilamide in Partial and Total Resection of Lung. F. F. Allbritten Jr., J. B. Flick and J. H. Gibbon Jr., Philadelphia.—p. 187.
Experimental Observations on Use of Drugs of Sulfonamide Group in Pleural Space. E. M. Kent and E. A. Graham, St. Louis.—p. 198.
*Local Use of Sulfanilamide in Pleural Cavity. T. H. Burford and E. A. Graham, St. Louis.—p. 203.
Giant Cell Tumor of Trachea. J. M. Cid and J. L. Bonilla Jr., Rosario, Argentina.—p. 210.
Metastatic Carcinoma of Lung Invading and Obstructing Bronchus. F. Raine, Milwaukee.—p. 216.
Diaphragmatic Hernia with Penetrating Ulcer of Herniated Stomach: Case Corrected by Surgery. L. W. Frank and J. E. Hamilton, Louisville, Ky.—p. 219.
*Bilateral Surgical Collapse for Pulmonary Tuberculosis. H. Meltzer, Ninette, Man., Canada.—p. 227.

Local Use of Sulfanilamide.—Burford and Graham introduced crystals of sulfanilamide into the pleural cavities of 23 patients after intrathoracic operations. The operations were lobectomy for lobar suppuration in 16 patients, total pneumonectomy in 4, excision of a mediastinal dermoid in 1, excision of a dermoid with amputation of the upper lobe in 1 and lingulectomy for bronchiectasis in 1. Pneumonectomy was performed for universal bronchiectasis, for bronchiogenic carcinoma without appreciable pulmonary suppuration or for a bronchiogenic tumor with extensive pulmonary suppuration. Lobectomy was done, with one exception, for bronchiectasis and/or chronic pulmonary abscess. The amount of the drug introduced, 2 to 15 Gm., depended on the size of the patient, the degree of suppuration and the extent of the contamination. Empyema did not develop in the 8 patients who at no time had an open bronchus. Putrid pleural infection developed in 15 patients who had open transient or open persistent bronchi. The previous implantation of the drug did not prevent empyema from developing, once an open bronchus had supervened. Local use of the drug is indicated when contamination of the pleura has been extensive even though the bronchus will probably stay closed. In such cases local implantation of the drug provides a bacteriostatic medium at the point of least resistance. In all instances in which the concentration of sulfanilamide in the pleural fluid was determined, the values during the first twenty-four hours were above 200 mg. per hundred cubic centimeters. The blood concentrations demonstrate that the pleura has an efficient absorbing mechanism. A peak, as high as 10 mg. per hundred cubic centimeters of blood, was reached during the first twenty-four hours. Thereafter the curve dropped rapidly until at the end of seventy-two to ninety-six hours there was no drug in the blood stream. The authors tested each candidate with a trial dose of the drug before operation. They have seen no ill effect from the local implantation of the crystals into the pleural cavity.

Bilateral Surgical Collapse.—Meltzer discusses the status of 34 consecutive patients with pulmonary tuberculosis submitted to bilateral surgical collapse over a period of five years. In 23 the disease was far advanced and in 11 moderately advanced. Results indicate that in 55.8 per cent of the patients the tuberculosis was apparently cured, arrested or apparently arrested; 17.6 per cent of the group are working. Twenty-seven, or 79.4 per cent, had negative sputum at the time of the study. The mortality rate for the group was 2.8 per cent, which is considered most gratifying, as many of the patients were doubtful operative risks. Closure on the initial and on the opposite side was complete in 94.1 per cent. Twenty-two sides were collapsed by thoracoplasty in 21 patients and the cavity of 20, or 90.9 per cent, closed completely. Of twenty-five extrapleural pneumonolyses with petrolatum filling done in 22 patients twenty-three, or 92 per cent, were successful in closing all cavitation. The two unsuccessful ones were removed and replaced by thoracoplasty and both cavities closed. Of 20 patients submitted to pneumothorax, the cavities of 19 were closed successfully and in 1 a small residual cavity was evident.

Maine Medical Association Journal, Portland

32:275-294 (Dec.) 1941

Gallbladder Disease: Some Surgical Aspects. J. M. Parker, Portland. p. 275.
Id.: Liver Function Tests. J. E. Porter, Portland.—p. 278.
Id.: Oral Cholecystography. L. T. Thaxter and J. Spencer, Portland. p. 280.
Id.: History and Symptoms. R. S. Hawkes, Portland.—p. 282.

Medicine, Baltimore

20:397-520 (Dec.) 1941

Etiology and Causative Mechanism of Arteriosclerosis and Atheromatosis. W. C. Hueper, New York.—p. 397.
Studies on Poliomyelitis. M. Theiler, New York.—p. 443.
Infectious Polyneuritis: Infectious Neuronitis, Acute Polyneuritis with Facial Diplegia, Guillain-Barré Syndrome, Landry's Paralysis, etc. E. Roseman and C. D. Aring, Cincinnati.—p. 463.
Clinical Epidemiology of Poliomyelitis. J. R. Paul, New Haven, Conn. p. 495.

Michigan State Medical Society Journal, Muskegon

40:937-1022 (Dec.) 1941

Marriage After Forty. H. S. Collisi, Grand Rapids.—p. 965.
Sulfathiazole in Exfoliative Dermatitis. H. K. Baker, Flint.—p. 969.
Movement for Registration of Vital Statistics. E. E. Kleinschmidt, Chicago.—p. 971.
Presacral Resection for Relief of Pain. J. C. Scully, Menominee.—p. 979.
Relationship of Roentgenologist to Physician and Surgeon. L. M. Bogart, Flint.—p. 981.
Physiology of Nose. D. R. Heetderks, Grand Rapids.—p. 983.
*Successful Use of Sulfanilamide in Treatment of Blackwater Fever. B. Holm, Cadillac.—p. 988.

Sulfanilamide for Blackwater Fever.—Holm encountered a case of blackwater fever in northern Michigan and successfully treated the patient with sulfanilamide. No reports of the previous use of sulfanilamide for blackwater fever are to be found. The interesting features of the case were an unusually high fever (the axillary temperature being 108.4 F.), extreme anemia, the dramatic response to sulfanilamide of a patient who was moribund and who had previously failed to respond to any form of treatment and the removal of blood pigment stones from the gallbladder. The stones probably resulted from a concentration of blood pigments because of the hemolytic anemia rather than from an infection of the gallbladder.

Military Surgeon, Washington, D. C.

89:849-958 (Dec.) 1941

Disease and Destiny. R. A. Kilduffe.—p. 851.
Modern Technic of Spinal Anesthesia. R. B. Phillips.—p. 866.
Nutrition of the Soldier. M. H. Epstein.—p. 872.
General Anesthesia in Treatment of Maxillofacial Cases. T. E. Fischer.—p. 877.
Surgical Treatment of Essential Hypertension. W. P. E. Berwald. —p. 892.
Prophylaxis and Treatment of Epidermophytosis of Feet. P. R. Beckjord.—p. 895.
Liquefaction of Solid Foodstuffs for Diets. A. A. Neuwirth.—p. 898.
Justman Method of Eliciting the Knee Jerk: Little Known Procedure Which Merits More General Use. F. E. Weatherby.—p. 902.
Diagnostic Points Adapted from Colonel Bushnell's Teachings in Diagnosis of Pulmonary Tuberculosis by Physical Signs. J. W. Turner. —p. 903.
Surgeon Hunter Holmes McGuire: He Too Rode with Stonewall. J. M. Phalen.—p. 908.

New York State Journal of Medicine, New York

41:2371-2464 (Dec. 15) 1941

Diet of Young Infants. C. H. Smith, New York.—p. 2395.
Medical and Social Challenge of Alcoholism. E. N. Boudreau, Syracuse, N. Y.—p. 2407.
Bleeding as Late Sequela of Gastroenterostomy and Subtotal Gastrectomy of Billroth II Type for Duodenal Ulcer. S. Mage and R. Colp, New York.—p. 2415.
Vasomotor Rhinitis: Clinical Study of Forty-Five Cases. H. I. Shahon, Albuquerque, N. M.—p. 2419.
Increase in Height and Weight Among the Underprivileged. S. C. Karlan, Dannemora, N. Y.—p. 2425.

Texas State Journal of Medicine, Fort Worth

37:513-574 (Dec.) 1941

*Analysis of 500 Cases of Organic Heart Disease: Etiologic Types and Their Incidence. G. W. Parson, Texarkana.—p. 518.
City-County Hospital Management of Juvenile Diabetes. J. E. Dunlap, Dallas.—p. 522.
Panel Discussion on Laboratory Methods and Clinical Interpretations. S. W. Bohls, Austin; J. H. Black, J. M. Hill, Dallas; W. N. Powell, Temple, and L. M. Smith, El Paso.—p. 525.
Pulmonary Lobectomy and Pneumonectomy. R. Shaw, Dallas.—p. 529.
Electroencephalogram and Its Abnormalities in Certain Clinical Disorders. S. R. Snodgrass, Galveston.—p. 532.
Radiation Therapy in Gynecologic Conditions. J. H. Vaughan, Amarillo.—p. 536.
Delay in Labor Caused by Mild Degrees of Bandl's Ring. H. W. Johnson, Houston.—p. 538.
Acute Laryngotracheobronchitis. M. A. Davison, Marlin.—p. 541.
Stenosis of Nasolacrimal Duct. J. D. Walker, Houston.—p. 544.
Recent Advances in Public Health. W. S. Leathers, Nashville, Tenn. —p. 549.
*Critical Study of Laboratory Methods of Diagnosis of Gonorrhea in Women. C. E. Lankford, Galveston.—p. 553.

Organic Heart Disease.—Parson discusses the cause of 500 cases of organic heart disease, practically all of which he personally observed. The 500 patients were white adults, 267 men and 233 women; only 1, a girl of 18 with congenital heart disease, was less than 20. Approximately 100 were farmers or wives of farmers, 8 were physicians and the remainder were small business men, laborers and housewives. Hypertension and arteriosclerosis were the cause of the disease in 79.6 per cent. Arteriosclerotic heart disease in the absence of hypertension was uncommon in women. When arteriosclerotic heart disease without hypertension is present in women diabetes mellitus should be looked for. Rheumatic fever was responsible for the heart disease in 15.4 per cent of the patients. Only 2 patients had definite syphilitic heart disease, and in 8 the etiologic role of syphilis was questionable. Hyperthyroidism was considered the most important causative agent in 2 and a contributing factor in 3. Myxedema was the cause of cardiac signs and symptoms in 3, congenital heart disease in 6, subacute bacterial endocarditis in 4 and in the remaining 6 the disease was caused by a number of unrelated conditions. A family history of hypertensive cardiovascular disease was obtained from 69 per cent of those questioned. Tobacco was of no apparent etiologic importance. Neither was it of significance in angina pectoris and coronary occlusion. Occupation did not seem to be etiologically relevant. However, 155 of the women with hypertension were housewives. The average age of the hypertensive-arteriosclerotic group at the time the diagnosis was made was 61 years. The average age of the rheumatic group was 49 years. The patients were therefore fifteen to twenty years older than is usual for patients with rheumatic heart disease. This might have been due to the milder course of rheumatic infections in the climate of Texas. Though rheumatic fever and allied infections are relatively uncommon causes of heart disease in this area they are sufficiently frequent to demand careful study. If they could be eliminated, approximately 15 of every 100 patients with heart disease would have some other disease.

Diagnosis of Gonorrhea.—Lankford examined 3,060 specimens from 1,107 women for the gonococcus by smear and culture methods. The number of examinations per patient ranged from one to thirty. The testing yielded 251, or 22.7 per cent, with gonococcic infection, exclusive of recurrences. Fifty patients had one to five recurrences demonstrated by culture. Nearly three times as many positive reactions were obtained by culture as were obtained by smear. In cases of untreated gonorrhea the culture was two and six-tenths times as effective as the smear; in cases of treated gonorrhea the ratio was 4.25:1. When cultures are prepared as a routine, smears may be eliminated without a significant sacrifice of accuracy. It is best to plate endocervical specimens directly rather than to use broth as an intermediate vehicle. Differential tests for the gonococcus, in addition to the Gram staining of typical, oxidase-positive colonies, are unnecessary for routine cultural diagnosis of gonorrhea in women. The results of smears bear a direct relation to the number of viable organisms in the specimen.

Virginia Medical Monthly, Richmond

68:681-736 (Dec.) 1941

Emotional Maladjustments from Unplanned Parenthood. H. D. Coghill, Richmond.—p. 682.
Some Remarks on Principles of Medical Ethics. T. K. McKee, Saltville. —p. 688.
Management of Cystocele and Prolapsus Uteri. W. P. Barnes, Richmond.—p. 690.
Cancer in Male: Discovered in Clinic Treating Genitoinfectious Diseases. W. M. Brunet, Chicago.—p. 693.
Report of 155 Hernia Operations with Follow-Up and Method of Operative Procedure. J. T. Rountree, Harrisonburg.—p. 696.
Selected Case Reports of Maternal Deaths. Maternal Health Committee of Medical Society of Virginia.—p. 698.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

49:643-688 (Dec.) 1941

*Vocal Cord Paralysis: Its Significance in Thyroid Disease Before Operation. A. C. Davis, Rochester, Minn.—p. 643.
Analgesia and Amnesia in Obstetrics. L. C. Conn and J. R. Vant, Edmonton, Alta., Canada.—p. 650.
Subcutaneous Injuries of Abdomen. H. P. Totten and J. N. O'Neill, Los Angeles.—p. 654.
Replacement Method in Surgery of Pituitary Tumors: New Technic. E. Seletz, Los Angeles.—p. 660.
Recent Advances in Urology of Interest to General Practitioner. M. B. Wesson, San Francisco.—p. 662.

Preoperative Vocal Cord Paralysis.—Davis states that among 6,754 cases of adenomatous goiter 26 (0.38 per cent) instances of unilateral paralysis of the vocal cord were observed before and after thyroidectomy. In 12 additional cases there was a questionable diagnosis of paralysis. In 6 others a vocal cord was described as paralyzed before operation but moving normally subsequent to operation. In 11 of the 26 cases the surgeon specifically described adenomatous projections which arose on the side of the paralyzed vocal cord and extended retrotracheally. In 7 of 8 patients whose goiter was found to be substernal the vocal cord was paralyzed on the side on which the goiter extended beneath the sternum. In the remaining patient the vocal cord was paralyzed on the opposite side. In 4 of 6,453 cases of exophthalmic goiter paralysis of one vocal cord was present both before and after thyroidectomy. There was no explanation for the paralysis. Among 163 cases of malignant disease of the thyroid there were 24 instances of paralysis of the vocal cord; in 10 the right vocal cord, in 13 the left vocal cord and in 1 both cords were paralyzed. Carcinoma was contained in an adenoma in only 2 (or 8 per cent) of the cases in which there was paralysis of a vocal cord and in only 3 (or 12 per cent) of the cases in which paralysis of a vocal cord was not present and in which an accurate clinical diagnosis was made but in 38 (or 53 per cent) of the cases in which the true condition was not suspected clinically. Of 57 cases of chronic thyroiditis paralysis of the vocal cord was present in none. When it is difficult to distinguish between a malignant process and chronic thyroiditis, paralysis of the vocal cord should suggest a maligant process.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2:681-716 (Nov. 15) 1941

Hemiprostatectomy for Unilateral Adenomatous Enlargement. W. S. Handley.—p. 681.
Methods for Local Application of Sulfanilamide. F. Hawking.—p. 685.
Treatment of Diphtheria Carriers with Sulfathiazole Snuff. A. M. Thomas.—p. 687.
Nutritive Value of Bread: Fortified White Flour and National Wheatmeal Compared. Margaret D. Wright.—p. 689.
*Treatment for Chronic Psoriasis. A. Bigham.—p. 692.

Chronic Psoriasis.—Bigham treated 53 patients with chronic psoriasis by employing a combination of the methods recommended by Madden and by Goeckerman and O'Leary: The patient is told to rub an ointment of 2 per cent crude coal tar in soft petrolatum into all lesions every night. In the morning, in the ultraviolet radiation department, all but a thin film of the ointment is removed with olive oil; then ultraviolet irradiation is carried out. This treatment is given every day. During treatment the patient takes daily 1,000 units of vitamin B_1 by mouth. When the lesions are especially encrusted, 1.3 to 2 Gm. of salicylic acid is added to the tar ointment and the patient is advised to scrub off the scales with a stiff brush or with pumice stone. The ointment is reapplied after this exfoliating treatment and the irradiation carried out. Care should be exercised in treating children by this method, as the danger of lighting up a tuberculous focus exists when young persons are generally irradiated.

Journal of Hygiene, London

41:225-344 (Nov.) 1941

Human Physiology Under High Pressure: I. Effects of Nitrogen, Carbon Dioxide and Cold. E. M. Case and J. B. S. Haldane.—p. 225.
Further Experiments on Field Vole with Tubercle Bacilli. A. S. Griffith.—p. 250.
Further Experiments on Golden Hamster (Cricetus Auratus) with Tubercle Bacilli and Vole Strain of Acid Fast Bacillus (Wells). A. S. Griffith.—p. 260.
Survival of Calmette-Guérin Strain of Tubercle Bacillus (BCG) in Blood and Mamma of Goats. A. S. Griffith.—p. 266.
Atypical Strains of Tubercle Bacilli in Human Tuberculosis. A. S. Griffith.—p. 272.
Susceptibility of Water (or Grass) Snake (Trepidonotus Natrix) to Avian Tubercle Bacillus and to Reptilian Strains of Acid Fast Bacilli. A. S. Griffith.—p. 284.
Method of Preserving Strain of Tubercle Bacillus Without Having Recourse to Successive Subcultivation or Injection of Usual Laboratory Animals. A. S. Griffith.—p. 289.
Infection of Adult Cattle with Mycobacterium Tuberculosis Avium. R. E. Glover.—p. 290.
*Observations on "Hospital Infection" in Plastic Surgery Ward. E. T. C. Spooner.—p. 320.
Serologic Diagnosis of Glandular Fever (Infectious Mononucleosis): New Technic. A. M. Barrett.—p. 330.

Hospital Infection in Plastic Surgery Ward.—Spooner states that over a period of six months the wounds and throats of patients in a plastic surgery ward were swabbed. Hemolytic streptococci obtained from them were typed; 65 per cent or more of the wounds harbored Streptococcus pyogenes, but relatively few of the patients suffered severe damage as a result of the infection. About a fourth of the wounds of the patients admitted to the ward became infected with the streptococcus while the patients were in the ward. Two wound and throat epidemics, one due to type 13 and one to type 4/24 streptococci (agglutinated by serums against both type 4 and type 24), occurred. Measures designed to prevent hospital infection of wounds must be aimed at all infections. Septic fingers and hands among nurses introduce a risk to wounds. Measures must be taken to block obvious channels of infection from one wound to another. It seems probable that the risk of droplet infection from unguarded throats and of contact infection from unguarded fingers is greater than that of air borne infection. The risk of infection from the air is not great for a small wound which is not exposed to the air for many minutes. However, all possible precautions against the risk from dust borne and air borne bacteria should be taken. Patients with facial burns may rapidly become throat carriers, and may thereby contribute a large share to the infection of the dust and air of the ward.

Journal Obst. & Gynaec. of Brit. Empire, Manchester

48:549-684 (Oct.) 1941

Discussion on Origin of Cysts on Broad Ligament, with Description of Broad Ligament Cyst Which, with Fallopian Tube and Ovary, Had Undergone Torsion. B. Gilbert and B. K. Sheorey.—p. 549.
Puerperal Infection Associated with Hemolytic Streptococci Other Than Lancefield's Group A. A. M. Ramsay and M. Gillespie.—p. 569.
Posterior Pituitary Factor in Toxemias of Pregnancy. C. Mukherjee.—p. 586.
Suture of Perineum Using Local Anesthesia. D. J. N. Smith.—p. 610.
Hyperemesis Gravidarum and High Vitamin Therapy. L. O. Watt.—p. 619.
Antepartum Hemorrhage with Retention of Dead Fetus. A. G. Rutter.—p. 627.
Unusual Tumor of Vulva. B. Solomons.—p. 632.
Pseudovarian Cyst: Case. J. D. Marchant.—p. 635.
Vesicovaginal Fistula of Four Months' Duration Treated by Indwelling Catheter: Case. Gladys H. Dodds.—p. 638.

Journal of Pathology and Bacteriology, Edinburgh

53:327-456 (Nov.) 1941

Sputum Film Cultures of Tubercle Bacilli: Method for Early Observation of Growth. D. M. Pryce.—p. 327.
Factors Affecting Activity of Toxin of Clostridium Welchi. C. L. Oakley and G. Harriet Warback.—p. 335.
Experiments on Drying and Freezing Bacteriophage. Margaret L. Campbell-Renton.—p. 371.
Microscopic Observations on Bacteriophage of Staphylococcus. K. B. Eisenberg-Merling.—p. 385.
Agglutination Reactions of Certain Trichomonads in Serums Obtained from Immunized Rabbits, with Particular Reference to Trichomonas Fetus. Muriel Robertson.—p. 391.
Obstruction of Renal Tubules in Myelomatosis and in Crush Injuries. J. E. Morison.—p. 403.
Function of Tissue Cells in Mediums Used for Growing Vaccinia Virus. H. B. Maitland and A. W. Laing.—p. 419.
Darkground Studies of Vi Agglutination of Bacillus Typhosus. A. Pijper—p. 431.

Journal of Physiology, Cambridge

100:233-368 (Nov.) 1941. **Partial Index**

Ratio Between Antidiuretic and Pressor Activities of Posterior Pituitary Extract Subjected to Mild Hydrolysis. A. M. Fraser.—p. 233.
Method for Estimating Fraction of Volume of Muscle Contained in Vascular System. J. F. Danielli.—p. 239.
Volume of Vascular System and Penetration of Sugars from Vascular System into Intercellular Space. J. F. Danielli and H. Davson.—p. 246.
Investigation of Simple Methods for Diagnosing Vitamin A Deficiency by Measurements of Dark Adaptation. D. J. Dow and D. M. Steven.—p. 256.
Quantitative Method of Assay for Thrombin and Prothrombin. L. B. Jaques.—p. 275.
Strength and Size of Bone in Relation to Calcium Intake. G. H. Bell, D. P. Cuthbertson and J. Orr.—p. 299.

Journal of Royal Army Medical Corps, London

76:189-248 (April) 1941

Report on Sixth International Course in Malariology, 1939. J. J. O'Dwyer.—p. 189.
*Bacteriologic Researches on Cases of Cerebrospinal Meningitis, Convalescents and Carriers. C. E. van Rooyen and J. C. Morris.—p. 200.
Musings on Medical Evacuation in Mobile Warfare. I. H. Lloyd-Williams.—p. 212.
Appendicitis in India. F. V. Stonham.—p. 214.
Some Hygienic Problems Which Will Follow on Adoption of Mechanization in India. R. A. Anderson.—p. 223.

Bacteriologic Study of Cerebrospinal Meningitis.—Van Rooyen and Morris record the data of a bacteriologic study of the swabs of 200 patients, 113 convalescents and 36 carriers of nasopharyngeal meningococci treated with sulfapyridine. The epidemic occurred in the British Expeditionary Force in 1939-1940. An extremely ill man received 8 Gm. of sulfapyridine daily for two days, 6 Gm. for three days and 3 Gm. daily for five days. A patient with mild symptoms was given 6 Gm. for two days, 4 Gm. for two days and then 2 Gm. for two days. Only 3 patients died. Granulocytopenia, severe hematuria or anuria was not observed, and all the remaining patients recovered completely. Some patients complained of giddiness and fainting during convalescence, in view of which the authors suggest that the minimum period for recuperation from a mild attack of cerebrospinal meningitis should be three months, and that probably all patients who recover should be submitted to a special neurologic examination before they return to duty. No organism could be demonstrated in the films or in the cultures of the nasopharyngeal material from 15 patients with all the

classic signs and symptoms of the disease. Study showed that after the treatment the meningococcus disappeared from the cerebrospinal fluid in twenty-four or more hours, after which the infiltration of polymorphonuclear leukocytes subsided. The lymphocytes and monocytes were the last to disappear. Study of a number of films showed that about twelve hours after the drug was given the organism began to swell, its outline became hazy and the diplococcus formation was lost. This change was most noticeable in the extracellular cocci, which were the first to disappear, followed later by the intracellular cocci; on the second day of treatment most of the organisms were scarcely recognizable as meningococci. Of 36 soldiers with meningococci in the nasopharynx who were given 3 Gm. of sulfanilamide daily for six days 35 responded, and on the eighth day no meningococci were present. The remaining carrier despite local treatment continued to harbor the organism for several weeks and even resisted a second course of sulfanilamide. An estimate of the carrier rate was obtained from the data of tests on 107 contacts; in 30 the results were positive. Of 113 patients swabbed twice after treatment but prior to discharge from the hospital only 3 harbored the meningococcus. These 3 may have been resistant to sulfapyridine or they may have become reinfected. Apart from causing the meningococcus to disappear from the nasopharynx of most convalescent persons and carriers the drug appeared to diminish the incidence of other potentially pathogenic bacteria normally present in the nasopharynx. Sixty-two strains of meningococcus were isolated from the patients; sixty were agglutinable by group I but not by group II serum. The earliest sign of an agglutination reaction was observed in the serum of 1 patient on the seventh day of illness for his own group I meningococcus and for another strain from another patient, in an end titer of 1:30. No cross agglutinin for group II meningococci was observed. The last time agglutinins could be demonstrated in a patient's blood was on the forty-ninth day, when a 1:30 dilution gave a positive result. The highest agglutination response usually occurred at about the twenty-first day of illness, when the serum frequently reacted in a dilution varying from 1:120 to 1:240. In some patients and convalescents agglutinins could not be demonstrated at any stage of the illness. For this the authors have no explanation except to suggest that the rapidity with which sulfapyridine acted did not permit them to develop. Six patients had acute tonsillitis accompanied by pharyngitis due to the meningococcus; only 4 of them were repeatedly exposed to the infection. The appearance of the throat and fauces was not unlike that observed in early acute streptococcic tonsillitis. The 6 patients responded to treatment with sulfapyridine and were discharged to duty in ten days. A profuse growth of group I meningococci was isolated from 4 patients and a mixed growth of meningococci and Streptococcus viridans from the other 2.

Lancet, London

2:587-624 (Nov. 15) 1941

Medicine and Duty. T. B. Layton.—p. 587.
Epidemic Neonatal Diarrhea in Maternity Hospitals: I. Clinical Aspect. G. Ormiston.—p. 588.
Id.: II. Bacteriologic Aspect. N. Crowley, F. Fulton, A. W. Downie and G. S. Wilson.—p. 590.
Nephrectomy in Unilateral Renal Disease with Hypertension. G. O. Richardson and G. A. Smart.—p. 594.
*Black Currant Purée as Source of Vitamin C. W. W. Payne and Elizabeth Topley.—p. 596.
Lupus Erythematosus and Tuberculin Tests. J. Kelvin.—p. 597.
Prevention of Droplet Borne Infections by Spray: Field Experiment. D. S. Middleton and I. C. Gilliland.—p. 598.
Biopsy of Endometrium. J. Howkins.—p. 599.
*Toxicity of Phenothiazine. D. Hubble.—p. 600.
Insulin Hypoglycemia: Changes in Nervous Manifestations. R. D. Lawrence.—p. 602.

Black Currant Purée as Source of Vitamin C.—Payne and Topley determined the minimal dose of vitamin C in the form of a black currant purée as a substitute for orange juice that was required by 59 children 3 to 12 years of age to supplement the routine diet in some children's wards of an emergency medical service hospital. During the winter and spring the diet at the hospital was as good as the local food position allowed and probably better than that of many children in the country at the time. Nevertheless the daily vitamin C intake furnished by the diet was unlikely to exceed 5 mg. of ascorbic acid and that only if the children ate up all their ration of greens. In 1 child, who had been in the hospital for several months, mild clinical scurvy developed. Not 1 of the 59 children had a saturation level of the acid. Such a level was reached by giving the children synthetic ascorbic acid; then a purée of black currants was given as a dietary supplement, and the level at which saturation could be maintained was determined. The daily maintenance dose of the purée varied from 15 to 6 mg. of ascorbic acid to 14 pounds (6.4 Kg.) of body weight according to age, corresponding to an average daily dose of 1½ to 2 ounces (45 to 60 cc.) of the purée per child.

Toxicity of Phenothiazine.—Hubble states that, although phenothiazine has proved an effective remedy against the threadworm infection of more than 30 persons, it is probably too dangerous a drug to be used as routine therapy; anemia and toxic hepatitis have followed its use. Much smaller doses of phenothiazine are poisonous to the blood and the liver than have been suggested (1 Gm. daily for seven days for children aged up to 4 years, 2 Gm. for those between 4 and 8 and 8 Gm. for adults) for the treatment of threadworm infection. The author adds 3 instances of anemia to the 3 already reported. He reports also the occurrence of toxic hepatitis in 2 of the children following treatment with phenothiazine. He suggests that in the future its use should be restricted to patients for whom less dangerous therapy has repeatedly failed.

Monatsschrift für Psychiatrie und Neurologie, Basel

104:129-192 (No. 3) 1941. **Partial Index**

Subacute Ascending Polyradiculoneuritis. L. van Bogaert.—p. 129.
Ventriculometry. F. Morel and R. de Montmollin.—p. 150.
*Therapeutic Experiments with Phenytoin Sodium in Epilepsy. K. Gyárfás and B. Horányi-Hechst.—p. 179.

Phenytoin Sodium in Epilepsy.—Gyárfás and Horányi-Hechst point out that Putnam and Merrit found that phenytoin sodium had the strongest spasmolytic and the least narcotic effect among five different substances. The authors report their experiences with this substance in ambulatory patients who for long periods had had frequent attacks of grand mal and had shown no improvement in response to therapy with bromides or barbiturates or to dietetic measures. The patients' mode of living was not changed during medication with phenytoin sodium. The majority of the patients had genuine epilepsy. Of 57, 20, or more than a third, were completely freed from their attacks. In another third considerable improvement was obtained. The patients emphasized that the remedy had no narcotic or stupefying effect and that it improved their working capacity. Observations on rabbits disclosed that phenytoin sodium causes hepatic lesions but that the simultaneous administration of sodium thiosulfate prevents them. Phenytoin sodium given in not too large doses and combined with phenobarbital is effective and free from noxious effects. It is indicated in cases of severe grand mal epilepsy in which medical control is possible.

Schweizerische medizinische Wochenschrift, Basel

71:1169-1192 (Oct. 11) 1941. **Partial Index**

*Laënnec's Hepatic Cirrhosis. F. Wuhrmann.—p. 1169.
*Hepatic Cirrhosis and Pernicious Anemia. H. W. Hotz.—p. 1173.
Observations on Etiology of Stimulus Conduction Disturbances of Heart. E. Attinger.—p. 1176.
Treatment of Secondary Anemias with New Type of Reduced Iron. L. Feil.—p. 1180.
Results of Treatment of Postencephalitic Parkinsonism with Belladonna Root Extract. H. D. von Witzleben.—p. 1183.

Laënnec's Cirrhosis.—Wuhrmann directs attention to the comparatively high frequency of hepatic cirrhosis in Switzerland. Necropsies at the Zurich clinic revealed the disease in 11 per cent of the subjects (7.5 per cent of women and 14.5 per cent of men). Observations on 150 cases are presented. In 50 cases hepatic cirrhosis was the principal lesion; in the rest it was discovered accidentally. There were 106 men and 44 women; 54 were in the first, the so-called insular, stage and 34 in the more advanced interinsular stage; 62 presented the typical picture of severe cirrhosis. The history of his patients disclosed the use of alcohol by 91 per cent and its abuse by 82 per cent. Tuberculosis, brucella abortus infection and syphilis were not present. In approximately one third of the cases the disease began with digestive disorders, in another third with circulatory disturbances and in 19 cases with pulmonary tuberculosis. In only 60 cases (40 per cent) was the disorder correctly diagnosed.

In an additional 16 (11 per cent) it was suspected. In half of the cases the condition was not suspected. Typical behavior of the male patients is characterized by euphoric mood, emotional instability and increasing loss of memory. It is noteworthy how well cirrhotic patients tolerate the severe disturbances of the advanced stages of the disease. Female patients with cirrhosis not infrequently are uncommunicative and display a negativism associated with defiance or spite. Patients with hepatic cirrhosis frequently exhibit hypotrichosis of the trunk, thick hair on the head, a feminine type of hair growth in the pubic region, lack of axillary hair and star shaped cutaneous telangiectases, particularly on the upper part of the trunk, and are usually of the pyknic constitutional type with lively temperament. Jaundice was lacking in more than half of the cases. The Takata-Ara reaction was positive in only about half of the cases that came to necropsy. The heat coagulation band test of Weltmann and the erythrocyte sedimentation test proved valuable in the diagnosis and prognosis. The galactose tolerance test and the demonstration of increased urobilin in the urine are of great value.

Hepatic Cirrhosis and Pernicious Anemia.—According to Hotz, hyperchromic macrocytic anemia occurs in patients with hepatic cirrhosis. Many observers deny that the pernicious type of anemia can develop on the basis of hepatic cirrhosis. Hotz was able to demonstrate the hematic and medullary morphology of pernicious hemopoiesis and its responsiveness to liver extract in 22 cases of cirrhosis (19 of Laënnec's type and 3 of hemochromatosis). The unique position of this "pernicious cirrhosis" compared to cryptogenic (Biermer's) pernicious anemia is proved on the one hand by certain hematologic differences and on the other hand by the frequent preservation of the gastric hydrochloric acid secretion and the occurrence of prolonged remissions without liver therapy. The author's cases were characterized by the frequent occurrence of disturbances in fat absorption, which became manifest in periodic occurrences of fat diarrhea and usually led to a relapse of anemia. The author suggests that the pernicious cirrhosis anemia is caused by a complex disturbance of the metabolism of the antiperniciosa principle: (1) by a deficient formation of Castle's endogenic factor owing to a disturbance in the gastric secretion, (2) by inhibition of the resorption of the deficiently formed antiperniciosa principle as the result of impaired intestinal absorption and (3) by impairment of the storage function of the cirrhotic liver for the antiperniciosa principle.

Bollettino d. Soc. Ital. di Microbiol., Milan

13:79-102 (July-Aug.) 1941. **Partial Index**

*Action of Staphylococcus Toxin on Sugar Metabolism. C. Fiorio.—p. 88.

Action of Staphylococcus Toxin on Sugar Metabolism.—Fiorio inoculated rabbits with a staphylococcus toxin by the subcutaneous or the intravenous route and found that the toxin exerts a hypoglycemic effect. Inoculation with a fatal dose is followed by a progressive fall in the blood sugar, which reaches a low level a few hours before death. Hypoglycemia is transient after a subfatal dose and corresponds to the dose administered. The glycemia is independent of the temperature. Intravenous injection of dextrose immediately after inoculation prolongs the life of animals and attenuates symptoms of poisoning. Immunization with toxoid makes the animals resistant to a fatal dose of toxin. The animals exhibit transient hypoglycemia, which is compensated spontaneously. The reaction of an immunized animal to a fatal dose of toxin is similar to that of a nonimmunized animal to a subfatal dose of the toxin.

An. Soc. Mex. de Oftalmología, etc., Mexico, D. F.

16:189-252 (July-Aug.) 1941. **Partial Index**

*Optic Neuritis in Pellagra. E. Mendoza González.—p. 189.

Optic Neuritis in Pellagra.—Mendoza González observed optic neuritis in 7 of a large group of pellagrous patients. This type of neuritis has not been previously reported. Three patients were alcoholic addicts. Two of these presented alterations in the central vision and photophobia. The third alcoholic addict presented a picture of optic neuritis. Two patients had amblyopia without the ophthalmologic picture of optic neuritis, and 2 had diminished visual acuity and visual reduction of the temporal fields. Proper diet and the administration of nicotinic acid effected great improvement in the pellagra symptoms. They had no effect on the visual symptoms of optic neuritis. These improved on oral and parenteral administration of thiamine hydrochloride and the use of a diet rich in vitamin B_1. The patients were also given extracts of gastric mucosa to stimulate proper absorption of vitamin B_1.

Revista Clínica Española, Madrid

3:189-284 (Sept.) 1941. **Partial Index**

Hunger Edema. V. Gilsanz García.—p. 189.
Spirography in Functional Tests of Respiratory and Cardiocirculatory Apparatuses. H. Olmes de Carrasco.—p. 197.
*Ulnar Neuritis Due to Arthritis of Elbow. C. Jiménez Días, E. Rosa and V. Gilsanz.—p. 208.
Diencephalic Factor in Pathogenesis of Hypertension. P. Rodrigo Sabalette.—p. 211.
Study of Sinus Pericranii. R. Vara López and V. Meana Negrete.—p. 215.
Studies on Blood During Pregnancy, Labor and Puerperium in Women with Pregnancy Toxicosis. F. Orengo Díaz del Castillo.—p. 220.
Should Roentgen Census be One of Principal Duties of Antituberculosis Dispensary? R. Navarro Gutiérrez and F. Paz Espeso.—p. 228.

Ulnar Neuritis Due to Arthritis of Elbow.—Jiménez Días and his collaborators report the case of a railroad worker aged 50 who presented paresthesia of the right hand limited to the little finger and the ring finger, atrophy of the muscles and progressive difficulty in the use of the two fingers. Examination demonstrated ulnar neuritis. Serologic tests and blood studies provided no etiologic clues. A roentgenogram of the elbow disclosed proliferating arthritis deformans of the joint, particularly pronounced about the epitrochlear canal. A similar condition was observed in a man aged 51. The authors stress the rather high incidence of arthritis of the elbow, in certain occupations. A knowledge of the association of ulnar neuritis with arthritis of the elbow is important for the treatment. The nerve should be displaced from the epitrochlear canal to the anterior surface of the forearm, thereby removing the cause of the disorder.

3:285-380 (Oct.) 1941. **Partial Index**

Migrainoid Neurodystonia and Its Hereditary Transmission (Heredity of Headache). C. Jiménez Díaz and J. C. de Oya.—p. 296.
Investigations on Lathyrism. C. Jiménez Díaz.—p. 303.
Adrenogenital Endocrine Correlations. J. Botella Llusiá.—p. 309.
*Total Thyroidectomy in Pulmonary Tuberculosis. M. Soriano Jiménez.—p. 313.
Sclerosing Factor in Pulmonary Silicosis. L. Ramallal Rumbo.—p. 322.
Muscular Spasm as Deficiency Symptom. J. Rof Carballo.—p. 335.
Nature of Hematic Glycolysis. J. Souto Candeira and F. Grande Covián.—p. 336.
Treatment of Malta Fever, with Particular Consideration of Gold Therapy. P. Arévalo Seco.—p. 340.

Total Thyroidectomy in Pulmonary Tuberculosis.—Soriano Jiménez performed total thyroidectomy on 21 patients with advanced, bilateral, severe pulmonary tuberculosis in whom all other therapeutic measures had failed. The aim of the operation was to reduce the metabolic rate and increase the body weight and the defensive power. The operation was performed with the aid of local anesthesia and was well tolerated. Four types of response were noted. In the first type the rapid gain in weight was accompanied by great improvement in the general condition and by a progressive involution of the tuberculous lesions. This type of reaction was observed chiefly in patients with relatively recent infection (incurred one to three years before), particularly in the presence of hematogenic dissemination and new cavities with thin walls. In the second type the initial gain in weight was followed by a progressive loss leading to the death of the patient. The tuberculous lesions showed the same behavior: after an initial involution there was a progressive spread. In the third type the weight increased for a time and later decreased, but the progressive course of the lesions did not change. In the fourth type there was no gain in weight and no arrest of the disease. The author suggests that total thyroidectomy be performed earlier in the disease. The operation should be done as soon as it is realized that other therapeutic methods are ineffective. Thus it may be possible to perform the operation when the reactive powers of the organism are still comparatively good, particularly in patients with the bilateral, hematogenic, subacute forms and in those with repeated exacerbations and a tendency to ulceration.

Revista de Cirurgia de São Paulo

7:93-196 (Sept.-Oct.) 1941. **Partial Index**

*Therapy of Pyelonephritis. J. Martins Costa and A. A. da Motta Pacheco.—p. 137.
*Roentgen Irradiation in Hidradenitis. C. Fried.—p. 187.

Therapy of Pyelonephritis.—According to Martins Costa and Pacheco sulfonamide derivatives, especially sulfathiazole, control infection in pyelonephritis provided the urinary retention is relieved. The authors advise daily transfusion of 100 cc. of blood. Transurethral-ureteral drainage is of value in stimulating urination and controlling retention. Ureteral drainage is maintained as long as the symptoms are acute. Three cc. of a 1 per cent silver nitrate solution is instilled through the catheter daily. As a rule the acute symptoms and fever abate in two or three days. A focal infection can be the causal agent and should be removed. Inflammatory lesions of the genitourinary adnexa in patients of either sex can be controlled by conservative treatment. Infected vesical diverticula, infected tonsils, dental abscesses and furuncles should be removed and sinusitis treated. Stasis may be treated by blocking or by denervation of the renal sympathetic nerves. If urinary retention is caused by a mechanical obstacle, the obstacle should be removed. This may call for fixation, replacing a movable kidney, removal of calculi, plastic correction of a ureteral stricture or ligation and sectioning of aberrant vessels.

Roentgen Irradiation in Hidradenitis.—Fried administered three to six roentgen irradiations of 120 to 160 roentgens to the axilla. The skin was cleansed before the irradiation and pure petrolatum or zinc oxide ointment was applied. In cases of acute inflammation wet applications were used and the arms were kept immobilized in the course of the treatment. When the treatment is begun early in the course of the disease the adenitis regresses without recurrence. Abscesses become rapidly delimited and may be emptied by punctiform incisions. Fever abates, and inflammation and infiltration rapidly regress. In cases in which new furuncles formed after surgical treatment the lesions were rapidly controlled by roentgen therapy. No recurrences were noted.

Revista de la Facultad de Medicina, Bogotá

10:191-280 (Sept.) 1941. **Partial Index**

*Ayerza's Disease. G. Toro Villa.—p. 242.

Ayerza's Disease.—On the basis of clinical and electrocardiographic studies of 6 cases of the Ayerza syndrome Toro Villa concludes that the disease presents three developmental stages: (1) an early stage of chronic bronchitis with or without dilatation of the bronchi and peribronchial sclerosis, (2) a stage of pulmonary or bronchopulmonary disease with cough and dyspnea and, later, pulmonary emphysema, sclerosis, cyanosis and somnolence, and (3) cardiac disease with terminal insufficiency. The clinical symptoms correspond to the stage at which the patient is observed. This fact gives rise to the differences in the opinions found in the literature.

Deutsche medizinische Wochenschrift, Leipzig

67:831-858 (Aug. 1) 1941. **Partial Index**

Task of General Surgeon in War Injuries of Ear and Upper Air Passages Until Care by Otorhinolaryngologist. L. B. Seiferth.—p. 831.
Rare Thoracic-Abdominal Gunshot Injury. Pfister.—p. 836.
Scarlet Fever Prophylaxis with New Vaccine. F. Faragó.—p. 837.
*Frequency of Menstrual Cutaneous Changes. K.-H. Schölzke.—p. 842.

Frequency of Menstrual Changes of Skin.—Schölzke noted the occurrence of cutaneous disorders in 378 women among 1,000 studied. The ages varied from 14 to 50. In the majority of women cutaneous eruptions developed about three and one-half days before menstruation; with the onset of the flow the lesions subsided abruptly or gradually. The cutaneous changes were of various types. Herpetic eruptions on the external genitalia, the thighs or the face were observed in 19; 18 women reported groups of vesicles in the region of the lip and one woman vesicles in the region of the left forearm. In 17, red, sometimes itching and scaling, spots appeared on the face. Five women had urticarial lesions; 2 had circumscribed edema, particularly in the region of the eyelids; 3 had itching over the entire body, and 1 presented changes resembling those of dermatitis dysmenorrhoeica. About one third of women with cutaneous menstrual disorders presented changes of the acne vulgaris type; the lesions were usually few in number but recurred nearly always in identical regions. They were most frequent on the chin, around the mouth and on the forehead, cheeks, nose, chest and back. In older women the lesions were often of the rosacea type. The menstrual changes of the skin did not always persist throughout life with the same intensity. The author investigated also how existing cutaneous lesions in 123 of the 1,000 examined women were influenced by menstruation. The high incidence of acne vulgaris (107 cases) is ascribed to the fact that a large proportion were of puberal age. The average age of patients with acne vulgaris was 20¼ years. In nearly half (24) of the 49 women with severe acne, menstruation was found to exert an influence (improvement in 9, exacerbation in 15). Of the 58 with mild acne 17 showed menstrual modifications (15 showed exacerbations). The menstrual cutaneous changes are usually most severe when the ovary produces little estrogenic hormone (immediately before menstruation) and subside when large amounts of this hormone are produced.

Zentralblatt für Chirurgie, Leipzig

68:1233-1280 (July 5) 1941

Early Diagnosis and Treatment of Impairment of Blood Perfusion. P. Sunder-Plassmann.—p. 1234.
*Experiences with Transfusion of Conserved Blood. J. Hohenwallner. —p. 1257.

Transfusion of Conserved Blood.—Hohenwallner reports observations on 120 transfusions of conserved blood. The average age of the conserved blood was eight days, but as a rule the blood was less than two weeks old; in 6 cases it was between fifteen and thirty-five days old. In all of these the transfusions were tolerated without a reaction. During the same period 236 transfusions of fresh blood were made. There was no great difference with regard to tolerability. Increases in temperature up to 2 degrees centigrade were observed in 24 patients who had received a fresh blood transfusion and in 11 who had been given conserved food. Chills occurred after 3 transfusions of fresh blood and after 2 of conserved blood. All these manifestations subsided rapidly and did not lead to serious complications. The author prefers to administer blood of the same group and preferably from blood relatives. In this respect the author differs from Schilling, who uses only blood of group O for conservation. Two methods of infusion were used with the conserved blood: (1) venous puncture and (2) continuous drip infusion. The use of conserved blood is chiefly indicated (1) as a blood substitute in hemorrhage, (2) to combat acute postoperative failure of the circulation and shock, (3) as a preparation to an operation, (4) to improve a poor general condition (cachexia) and (5) to combat sepsis. Conserved blood is not as valuable as fresh blood. The conserved blood method is especially valuable in small hospitals which have no organized donor service.

Acta Medica Scandinavica, Stockholm

108:483-616 (Oct. 8) 1941. **Partial Index**

Pernicious Anemia of Pregnancy: Clinical and Hematologic Study. Elsa Segerdahl.—p. 483.
*Buerger's Disease, Thromboangiitis Obliterans, in the Brain: Report of Three (Four) Cases. N. Antoni.—p. 502.
Effect of Schaumann's Disease on the Heart and Its Mechanism. W. T. Longcope and A. M. Fisher.—p. 529.
Cushing's Disease: Case. F. S. P. van Buchem.—p. 544.
*Hepatitis Chronica in Younger Persons. L. Abramson.—p. 561.
Coproporphyrinuria and Hemoglobin Metabolism in Experimental Lead Poisoning. S. E. Björkman.—p. 568.
Finger Tremor and Alpha Waves of Electroencephalogram. T. Lindqvist.—p. 580.

Thromboangiitis Obliterans in Brain.—Antoni reports 4 cases of thromboangiitis obliterans of the brain. The cerebral form of Buerger's disease is not rare; many patients thought to have juvenile arteriosclerosis probably suffer from this condition. The possibility of the existence of this disorder should be thought of when there are symptoms of cerebral disorder in young persons, especially if the attacks are many and fleeting and if the same focal sign disappears and recurs. Intermittent claudication associated with repeated cerebral attacks and perhaps cardiac disorder should always lead to the suspicion of Buerger's disease. Resection of cervical ganglions and periarterial sympathectomy led to improvement in 4 cases reported from the Foerster clinic. A collection of 948 cases from the

Mayo Clinic in 1938 reveals that sympathectomy does not cure the disease. If thrombosis is primary, the effects of heparin treatment should be tested. It is possible that the disease is a form of hypoheparinemia. The ages at the onset of symptoms in the author's cases were 36, 46 and 47 years, respectively. One patient had typical intermittent claudication with a feeble pulse in the legs; the rest presented no signs of disorder in the vessels of the extremities. The total duration of the disease was four months, one year and eight years, respectively. The neurologic disorders in all 3 cases were predominantly of the hemispherical type: monoplegia, hemiplegia, flimmer scotomas, hemianopia and aphasia. The heart and the aorta were normal or only slightly changed, but there was obliteration of one internal carotid artery (the right in 1 case and the left in 2). The moderate sized and small arteries in the inner parts of the brain and on the convexity showed typical lesions in 2 cases, but in the third case, despite grave clinical symptoms and foci of softening in the cortex, the distal cerebral arteries were intact. The severe periarteritis, around the cervical portion of the internal carotid artery, in case 3 is worthy of note. The adventitia of the arteries showed occasional signs of inflammation. The leptomeninges were greatly thickened over the foci and, to a lesser degree, in their proximity.

Chronic Hepatitis in Young Persons.—Abramson found 10 cases of chronic hepatitis of the young in a hospital material exceeding 10,000 cases of internal disorders. The chief symptom was icteric discoloration of the scleras. The disorder is not as rare as the aforementioned figures seem to indicate. If patients with indefinite dyspeptic disorders in whom routine examination of stomach, intestine, biliary system and pancreas gave negative results had been examined with more sensitive tests of the hepatic function, more cases of chronic hepatitis might have been found. The icteric discoloration of the scleras and possibly of the face is usually faint and may escape observation. The urine gives positive urobilinogen and urobilin reactions, but in some cases these are positive only during the more acute stage. Meulengracht's icteric index of the serum is constantly pathologic. Takata's reaction is positive. The galactose test gave a positive result in only 2 of 7 of the author's patients. The period of observation was between two and seven years. The ages of the patients varied between 20 and 42; 7 were less than 28. All were men. The subjective symptoms were fairly uniform, consisting of pain and burning in the epigastric region, particularly after the eating of rich and heavy foods. Abundant formation of gas and diarrhea occurred in some cases. The patient or those around him never observed the icterus. Predominant features of the morbid picture were fatigue, listlessness and depression. The disturbances increased after physical exertion, and several of the patients were incapacitated for two years or longer and had to change their occupation to one involving less physical exertion. Treatment never completely relieved all symptoms. The prognosis is uncertain, and a later development of cirrhosis is possible. The cause is likewise obscure. Although the literature suggests acute hepatitis as a possible cause, the majority of the author's patients had no history of acute hepatitis.

Nordisk Medicin, Stockholm

12:2857-2922 (Oct. 11) 1941. **Partial Index**

Finska Läkaresällskapets Handlingar

Contribution to Question of Mechanism of Origin of Pernicious Tapeworm Anemia: Experimental Investigation. B. von Bonsdorff. —p. 2877.

*Treatment of Celiac Disease with Injections of Human Blood. J. Wickström.—p. 2889.

Case of Tumor Resembling Blood Cyst in Rectum of Premature Infant. B.-Å. Söderlund.—p. 2895.

Treatment of Celiac Disease with Injections of Human Blood.—Wickström reports 5 cases of celiac disease in which treatment with blood transfusions exclusively was followed by considerable improvement in the general condition. Increase in weight, with more even rise in the weight curve, increased tissue turgor, better appetite and better disposition resulted. Intestinal activity was not improved to the same degree, and the results of the sugar tolerance tests and the serum phosphate values were unchanged. The author considers the transfusion treatment of celiac disease especially indicated for patients with poor general condition and with pronounced loss of weight and suggests that perhaps a factor is thus administered which in some way affects the intermediary metabolism and leads to a normal utilization of the food.

Hygiea

*Sulfanilamide and Sulfapyridine in Pulmonary Tuberculosis. O. Nilsson.—p. 2899.

Spondylolisthesis and Traumatic Displacement of Vertebra. I. Hermodsson.—p. 2901.

Are Seasonal Variations in Occurrence of Certain Diseases Related to Vitamin Content of People's Food? N. Alwall.—p. 2904.

Sulfanilamide and Sulfapyridine in Pulmonary Tuberculosis.—From his observations in 23 cases of pulmonary tuberculosis in which sulfanilamide or sulfapyridine was given either before admission, usually because of a mistaken diagnosis of acute pneumonia, or during sanatorium treatment, because of complications with acute pneumonia, bronchopneumonia, cystopyelitis and other conditions, Nilsson concludes that these agents exert no unfavorable effect on the tuberculous process.

12:3051-3146 (Nov. 1) 1941. **Partial Index**

Medicinsk Revue

Chronic Typhoid (Paratyphoid B) Carriers and Their Treatment: V. T. M. Vogelsang.—p. 3065.

Chronic Erythroblastosis in Adults, Affections with Distinctive Clinical and Hematologic Characteristics. P. Hanssen.—p. 3080.

Quantitative Sulfapyridine Determination: Preliminary Report. A. B. Aubert.—p. 3086.

Is Catarrhal Jaundice (Acute Hepatitis) Often Followed by Permanent Injury? C. Rosendahl.—p. 3091.

*Idiopathic Hemorrhagic Sarcoma (Kaposi's Sarcoma). A. Jacobsen. —p. 3095.

Idiopathic Hemorrhagic Sarcoma.—Jacobsen reports a case of sarcoma idiopathicum hemorrhagicum in a Norwegian woman aged 65, with relatively rare localization to the face and with roentgenologically established large defects in the frontal bone and the nasal bone. Destruction of the skull in this disorder has not previously been described (Kren). The patient's face had become monstrously deformed by a confluent tumor as hard as cartilage, localized in the greater part of the face and the left side of the lower jaw. Biopsy revealed typical Kaposi's sarcoma. After roentgen treatment in three series, 4,750 roentgens being given altogether, the patient's face has become nearly normal; the skin is slightly atrophic, with some enlarged veins, and is faintly bluish. The defects of the skull have largely filled out, and the patient feels well. Jacobsen says Kaposi's sarcoma occurs in twelve times as many men as it does in women, usually in patients over 50, rarely in patients under 40, mainly in Italians, next in Russians, Poles and Jews and rarely in Teutonic peoples. It generally appears symmetrically with multiple spots and nodes, with the onset as a rule in the extremities, and gradually spreads. The confluence of nodes may lead to large infiltrations. Nodes and infiltrations may ulcerate. The disease is primarily cutaneous, but nodes and infiltrations may develop in almost any organ. Striated and smooth musculature are apparently resistant to the process, and localization to the central nervous system seems to be unknown. Occasionally the bony system may be affected, especially in the hands and feet, where the phalanges may be completely destroyed. The course is chronic. Death results from the disease or from intercurrent disease in from two to three, up to twenty, even up to forty-eight years after the onset. Histologically the changes in the skin and the internal organs consist of distention and neoformation of capillaries, followed by proliferation of characteristic round cells, with numerous small hemorrhages and pigmentation and finally regressive changes with scarlike involution of the pathologic parts. When vascular changes predominate, soft, hemangioma-like formations occur; when the round cells predominate the nodes become hard and fibroma-like. In cases of doubtful diagnosis microscopic examination affords the best aid. Neither excision nor electrocoagulation prevents recurrence or spread, but surgical intervention may be indicated in cases of suppuration, gangrene or extensive destruction of bone. Arsenic also, in the form of neoarsphenamine, seems often to be noticeably effective in causing the cutaneous changes to disappear and in preventing local recurrence. Finsen light and quartz light have given encouraging results. According to Kren the best therapy is roentgen irradiation, given alone or in combination with arsenotherapy.

Book Notices

Surgery of Modern Warfare. By Sixty-Five Contributors. Edited by Hamilton Bailey, F.R.C.S., Surgeon, Royal Northern Hospital, London, etc. In Two Volumes. Volume II. Cloth. Price, $10. Pp. 481-899, with 326 illustrations. Baltimore: William Wood & Company, 1941.

Volume I of this work has already been reviewed. The whole is a presentation of the surgical problems presented by the injuries incident to enemy action from whatever source. The many contributors are British surgeons in the main well known to students of surgical literature, thus insuring a broad and authoritative presentation of the many problems of mass trauma. In the second volume the discussion centers more on fields of civilian specialization. In section VIII the discussion of wounds of bones and joints is completed. Section IX deals with wounds of the face and neck, including those of the special senses. Section X discusses wounds of the central nervous system and its covering, with special reference to injuries of the brain and skull, war injuries of the spine and cord and the management of the bladder in spinal injuries. There is a section on surgical diseases encountered in subtropical countries and one on administration. This last mentions details of handling patients in military, naval and civilian action, all based on practical experience in these fields of activity.

A large appendix is written by the editor to amplify the text, cover omissions, answer criticism and bring the subject up to date in relation to the recent literature. The book is profusely illustrated, attractively printed and entirely adequate to its purpose. It is not final in its conclusions, since the whole subject of treatment is in flux, but it does give sound surgical principles on which any final definite treatment will be erected. No one section will be complete for civilian specialists in that field but, since specialism is a luxury in war except for the rear areas, the treatment of special fields of surgery will be helpful to those who are not specialists or for those who must cease to be specialists under force of events.

The volumes are for the library and are worthy of a place in all such collections dealing with the surgery of war. There have appeared criticisms of books dealing with military surgery in that they do not fit the pocket of the military tunic. This seems an unfair criticism, since it is exceptional for any one acting in a field of intellectual endeavor to carry his knowledge in the pocket rather than in the head.

These volumes, representing as they do the present day experience of a group of surgeons for whose ability we must have respect, can be read with profit and interest by all who may be called from the walk of civilian surgery to care for those injured by the varied and manifold methods devised by the ingenuity of minds responsible for what is called enemy action.

Der Energiehaushalt unter Einwirkung von Aminosäuren bei verschiedener Ernährung. I. Der Einfluss des Glykokolls bei Hund und Ratte. Von Curt Oehme. Eingereicht am 1. August 1940. Sitzungsberichte der Heidelberger Akademie der Wissenschaften. Mathematisch-naturwissenschaftliche Klasse. Jahrgang 1940. 7. Abhandlung. Paper. Price 5.60 marks. Pp. 78. Heidelberg: Kommissionsverlag der Weiss'schen Universitätsbuchhandlung Heidelberg, 1940.

This monograph bids fair to become a new chapter in nutrition. The author had previously proved that guinea pigs, rats and rabbits in certain nutritive states show a decreased oxygen consumption and an increased respiratory quotient when any amino acid of group 1 is fed—aminoacetic acid, alanine, leucine, isoleucine, phenylalanine, tyrosine, glutamic acid or aspartic acid. Under similar conditions the reverse effects were produced by members of group 2—tryptophan, valine, arginine and histidine. Either effect can be suppressed by administering a suitable quantity of an amino acid of the other group, the compensation rule for amino acids.

The present report covers experiments of two and one-half years' duration on 4 mature dogs. A constant level of oxygen consumption and a constant respiratory quotient were established with the dogs on an aminoacetic acid poor diet, made up of skim milk, potato, fat, vitamins and other foods. Measurements were made when the dogs were fasting. When this state was attained the daily administration of 10 mg. of aminoacetic acid per hundred grams of body weight decreased the oxygen consumption during a period of some days by 35 to 38 per cent. If the diet contained somewhat more aminoacetic acid and calories, the effect of a supplement of aminoacetic acid was less. As the basal metabolic rate decreased the respiratory quotient increased. Similar effects were seen when aminoacetic acid was administered to starving dogs. Adding histidine reduces the effects produced by aminoacetic acid. Analysis of the energy balance indicates that the considerable changes in basal energy exchanges are chiefly adjusted through the opposed variable dynamic actions of various food components. For example, the primary and secondary specific dynamic effects of carbohydrate are significantly increased when the basal metabolic rate has been reduced by the feeding of aminoacetic acid. With the reduced basal metabolic rate seen in the postabsorptive state there is no accompanying change in oxygen consumption in the fed animal: the picture gradually develops during the twenty-four hours after the last meal.

The hypothesis is advanced that the processes by which protein is utilized during starvation, including particularly the action on the parts of the molecule that can yield carbohydrate and/or fat, are influenced in different ways by aminoacetic acid and members of its group as contrasted with members of group 2. Aminoacetic acid effects a sparing of energy by favoring carbohydrate components, while members of group 2 have an opposite effect. It is suggested that the compensation rule referred to may provide a new criterion for evaluating proteins. An unexplained phenomenon revealed in the tabulated data is the maintenance of virtually constant weight during periods of starvation lasting as long as two weeks. One wonders whether some sympathetic assistant smuggled food to the hungry dogs. While no mention is made of practical application of these data in Germany, it is not improbable that it has been attempted, particularly since aminoacetic acid is easily synthesized. This report is worthy of the attention of experts on nutrition not only because it appears to be a meritorious study but also because of its practical implications.

Treatment of the Patient Past Fifty. By Ernst P. Boas, M.D., Associate Physician, Mount Sinai Hospital, New York City. Cloth. Price, $4. Pp. 324, with 19 illustrations. Chicago: Year Book Publishers, Inc., 1941.

Recognition of the increasing importance of geriatrics is spreading quickly. Students of this field of medical practice appreciate that there are special problems in dealing with older people as well as certain diseases which occur more frequently in the aged than in younger adults. Normal aging brings many functional, structural and mental changes, some obvious and other occult. These changes affect the course, prognosis, symptomatology and treatment of disease. They also alter the normal; normality is not a fixed point but a series of variables changing with age. The aged present characteristics peculiar to their senescence. Dr. Boas, in this splendid little book, clearly recognizes these distinctions and keeps them in mind throughout his discussions of disorders of the various systems. The volume attempts to cover a tremendous amount of ground. Of necessity, some of the discussions are sketchy; this is particularly true of the chapters on the aging processes and the general management of the aged. However, the style is concise, many of the statements are precise and the factual data and suggestions are highly sound. Few clinicians today are equipped to prepare a systematic discussion of all the problems in any given field of medical practice; Dr. Boas reveals a remarkably broad understanding and presents his material in a lucid and exceptionally readable manner. The discussions of cardiovascular diseases are excellent; there are many eminently practical suggestions. Asymmetry in presentation, however, is apparent; more than a hundred pages are devoted to cardiovascular disease, but disorders of the nervous system are merely touched on in eight pages. The volume is well printed and well bound. The use of nonglossy paper is particularly welcome. The book can be heartily recommended for reading by all physicians having to do with patients over 50, but it cannot be considered as a book of reference.

Diabetes Mellitus. By Zolton T. Wirtschafter, M.D., Clinician in Charge, Clinic for Diabetes, Department of Medicine, Mount Sinai Hospital, Cleveland, and Morton Korenberg, M.D., Medical Resident, Jewish General Hospital, Montreal. Cloth. Price, $2.50. Pp. 186, with 9 illustrations. Baltimore: William Wood & Company, 1942.

"Diabetes Mellitus" by Wirtschafter and Korenberg is a poor book. Of the one hundred and fifty-nine pages of text thirty-one are direct quotations. Much of the remainder of the matter is made of abstracts, which often are not relevant to the subject discussed. Furthermore, critical review of these abstracts is not given. In the consideration of the treatment of coma, pages 158 and 159, at least one fourth of the one and one-half pages is made of a quotation from Claude Bernard. What did he know about diabetic coma? Furthermore, the amount of insulin recommended is ridiculous, and insulin is given a second place in treatment and along with it are included vitamins.

Frederick M. Allen played a vital role in the knowledge of diabetes in this country, yet his name is not mentioned in the book, whereas Newburgh, who a few years ago adopted Allen's ideas and claimed that, by reduction of weight, dextrose tolerance tests could be brought to normal, is given an extensive discussion. Bouchardat is not mentioned. In reference 31, H. Marble is a surgeon in Boston but he is not at all interested in diabetes. Alexander Marble is the name.

The seventh edition of Joslin's book came out in 1940 and this book comes out in 1942, and yet the reference to Joslin is to the sixth edition, appearing in 1937. On page 130 it is said that "the prognosis of the diabetic individual is excellent." As a matter of fact, do insurance companies take persons who have diabetes? Does the Civil Service take them? Are there any statistics in the world published on diabetes in which their average duration of life reaches thirteen years? Is it not true that even the expectancy of life for a diabetic person for practically all ages is limited to two-thirds that of ordinary individuals?

The paragraph on insulin gives nothing of its practical use in treating the patient.

On page 140 it is said that "the total energy requirement of a sedentary individual weighing 70 kilograms has been found to be from 2,500 to 2,800 calories per day, while that of a moderately active person of the same weight is from 3,000 to 3,500 calories." If one should calculate the diet for a sedentary individual, it would contain approximately carbohydrate 240 Gm., protein 145 Gm. and fat 123 Gm., calories 2,647, utilizing the authors' data, and for a moderately active person the authors advocate 40 per cent more, which would amount to approximately carbohydrate 300 Gm., protein 150 Gm. and fat 150 Gm., calories 3,150, and if, as he says, 1.5 Gm. of protein per kilogram and fat not over 100 Gm. for a diabetic person weighing 70 Kg., this would amount to carbohydrate 482 Gm. (!), protein 105 Gm. and fat 100 Gm. This is certainly ridiculous.

One of the noteworthy pieces of work in the last two years is that of Stadie. One reference and one sentence are used to describe this.

The book has some good points, but these obvious faults make recommendation impossible.

Psychiatrische Untersuchungen an einer Serie von Zwillingen. Von Erik Essen-Möller. Acta psychiatrica et neurologica, Supplementum XXIII. Paper. Pp. 200, with 82 illustrations. Copenhagen: Ejnar Munksgaard, 1941.

Genetic investigations, particularly research on twin development, have been thought to offer a clue for the detection of hereditary and environmental factors causing mental defects in twins. Recent studies on this subject have been made by a number of psychiatrists. Luxenberger began these investigations in 1928, and they have been continued by Lange, Kranz, Stumpfl and Borgström on criminal twins, by Conrad on epileptic twins and by Smith and Juda on idiot twins. A recent study on epileptic twins and on the various psychotic types has been made by Rosanoff and his co-workers. Erik Essen-Möller in his monograph on psychiatric studies on a series of twins sets out to determine the possible association between certain external diseases and symptoms and innate, hereditary factors by studying almost exclusively a series of identical twins. However, a group of fraternal twins was investigated to provide a control for comparison with the identical twins. After citing a considerable number of cases of mental defects in twins, the author is most impressed with the fact that the type of mental disease among twins is not always the same in a single pair. In a reported case one twin showed epileptic insanity while the other had a personality defect; thus the author found in identical twins that one sometimes manifested a psychosis and the other did not. Frequently both twins had personality defects, though there were often differences between the defects shown by the same pair. The author is led to conclude that psychosis in twins develops on the basis of an abnormal hereditary constitution. Not all writers on this subject are agreed that hereditary factors are the prime cause of mental diseases of twins. For instance, Rosanoff and his co-workers believe that cerebral trauma at birth is a factor of highest importance and other investigators that environmental factors, such as social or economic privations, rank high as etiologic factors. In all the studies that have been published up to now on criminality, insanity, epilepsy and idiocy in twins there remains a divergence of opinion as to the causal factor. The difficulty of drawing conclusions as to the cause of mental disease in one or both twins from a psychiatric study of the patients is obvious. The author's interpretation seems reasonable.

Sternal Puncture: A Method of Clinical and Cytological Investigation. By A. Piney, M.D., M.R.C.P., Physician, St. Mary's Hospital for Women and Children, London. With a foreword by the Rt. Hon. Lord Horder, M.D., F.R.C.P. Cloth. Price, 12s. 6d. Pp. 77, with 2 illustrations. London: William Heinemann, Ltd., 1941.

Study of the bone marrow is a highly specialized field which is unlikely to be undertaken by any one who is not already acquainted with hematology. This point of view may justify the inclusion of only two illustrations for the author, but it is doubtful whether the average reader will share it. The descriptive material is, however, authoritative and concisely stated and should prove useful in giving the reader a basic understanding of the subject. The technic of sternal puncture is precisely stated in the appendix, and the method preferred by the author is that used by Caronia and Arinkin. The author states the more important and practical facts of sternal marrow findings in leukemias, anemias, leukemoid reactions, tumors of the bone marrow, erythremia and allied states, and infective and protozoal diseases. A brief discussion of the normal sternal marrow findings in infants and children and some of the findings incident to blood dyscrasias of that age period would have materially contributed to the value of the monograph. Likewise the mention of methods available for the study of concentrated marrow would have been desirable. This practical monograph will serve a useful purpose and will be well received by the practitioner and technicians. They will miss the well executed colored plates of cells that they have come to expect of the author from his previous works on hematology. A few more colored plates to illustrate the descriptive material would have been of distinct value and increased the popularity of this monograph.

Acidos aminados: Fisiologia, patologia, terapeutica. Por Pedro M. Re. Cloth. Pp. 1,065, with illustrations. Buenos Aires: Libreria y editorial "El Ateneo," 1940.

This volume is a monumental, comprehensive study of the amino acids and their pathologic, pharmacologic and physiologic effects, from the pen of one who has been consistently interested in the field of amino acids for the past thirty years. His early work, done in Rome and Paris, led to a career as a member of the Faculty of Medicine at the University of Buenos Aires. Significantly, a large portion of the text is devoted to a critical presentation of the extensive research carried out by the author, much of which has appeared in scientific literature in Argentina.

Introductory chapters treat of the discovery, properties, chemical composition and origin of the amino acids. Then follows, in order, a thorough enlightened discussion of the amino acids and acid-base equilibrium; the classification and chemical composition of proteins; the occurrence, action and chemical structure of enzymes; the biologic importance of the amino acids; amino acids of organs and tissues; the exogenous origin of the amino acids; the metabolism of the amino acids; detoxification processes; the importance of amino acids to nitrogen equilibrium and growth; amino acids which contain sulfur; pigments; porphyrins; alterations in pigment metabolism; biologically important amines; amino acids, and immunity.

Four chapters are devoted to a detailed experimental study of the variations occurring in the amount and composition of

amino acids in the blood of normal and diseased subjects. One chapter concerns the therapeutic use of amino acids, including the action of aminoacetic acid as a diuretic, glutamic acid as a salt substitute, the use of amino acids in urticaria, anaphylactic phenomena, hay fever, anemia, gastroduodenal ulcers, ulcerative colitis, hyperthyroidism, metabolic disorders, diseases of the heart, general infections, beriberi, pellagra, cancer, tuberculosis, muscular disorders, acidosis, diabetic acidosis and Addison's disease. The final chapter includes methods, technics and suggestions for the qualitative and quantitative analysis of amino acids. An extensive bibliography is appended.

The volume provides one of the most complete, authoritative treatises on the chemistry and biology of the amino acids that have been published to date. As a reference book it should be a valuable addition to any scientific library.

Simplified Nursing. By Florence Dakin, R.N., and Ella M. Thompson, R.N., B.S., Assistant Director Practical Nurse Training, Ballard School, Young Women's Christian Association of the City of New York. Fourth edition. Cloth. Price, $2. Pp. 444, with 70 illustrations. Philadelphia, Montreal & London: J. B. Lippincott Company, 1941.

National emergencies create a need for reorganization of endeavor in many fields. In time of war the mother must assume many duties which might at other times be delegated to the professional nurse. But even in peace time the mother may find added to her problems that of care for some member of the family who is ill. This book merits its popularity. It is clearly written, and details of the technical procedure are so ably presented that the mother should find it easy to carry out the nursing care necessary for the comfort and well-being of the patient. The first section of the book deals with the trained practical nurse and the high school and vocational school nursing classes. The second section presents general information concerning the human body, public health, the health of the nurse, the preparation and use of food and housekeeping. The third and fourth sections deal particularly with nursing procedure in specific ailments.

Rheumatic Fever in New Haven. Edited by John R. Paul, M.D., Professor of Preventive Medicine, Yale University School of Medicine, New Haven. Paper. Price $1. Pp. 176, with 45 illustrations. New York: Milbank Memorial Fund, 1941.

The authors have undertaken to give the local epidemiologic picture of rheumatic fever as the clinician sees it in the industrial city of New Haven. From a survey of hospital admissions, from mortality statistics for juvenile heart disease and from determinations of the incidence of rheumatic heart disease among school children they concluded that rheumatic fever is common in New Haven. They found that rheumatic fever often followed acute hemolytic streptococcus infections and that the seasonal distribution was similar, both diseases being most frequent in the winter and early spring. Nationality seemed to be unimportant except that there appeared to be an unusual susceptibility to rheumatic fever among people of Irish stock. Their studies indicated that parental rheumatic fever was associated with an increased incidence of the disease in the siblings. Rheumatic fever was found to be more frequent among the poor than among the well to do. Dampness of dwellings was thought to be important in accounting for the relatively greater number of cases among the poor. The careful survey which the authors have made is a distinct contribution to our knowledge of a difficult subject which needs further elucidation.

The Art and Science of Nutrition: A Textbook on the Theory and Application of Nutrition. By Estelle E. Hawley, Ph.D., and Grace Carden, B.S. Cloth. Price, $3.50. Pp. 619, with 140 illustrations. St. Louis: C. V. Mosby Company, 1941.

Although this book has been prepared primarily for nurses, it is authoritative and should be useful to many other persons who desire a brief exposition of modern views on nutrition, food requirements under special conditions, diet therapy and the principles of selecting, preparing and serving foods. The illustrations are numerous and well chosen. There are a number of valuable tables in the appendix. Especially useful are the approximately fifty pages which are devoted to the chemical composition of foods.

Über cerebrale Zirkulationsstörungen: Tierexperimentelle Untersuchungen über Mikroembolien, Schädigungen der Gefässpermeabilität und Blutungen verschiedener Art. Von Tore Broman, Assistent am Physiologischen Institut in Lund. Acta pathologica et microbiologica Scandinavica, Supplementum XLII. Paper. Pp. 98, with 10 illustrations. Lund: Håkan Ohlssons Boktryckeri; Copenhagen: Ejnar Munksgaard, 1940.

This is an experimental study on guinea pigs, cats and rabbits of the effects of small emboli which stop the capillaries or the small terminal arterioles of the brain. The lesions were produced by intravenous injections of suspensions of rice or potato starch, emulsions of olive oil or air. At varying intervals after the embolism trypan blue was injected to make the permeability of the vessels visible. Any microembolic lesion was found to alter the vascular permeability after even as short a time as ten minutes. The author suggests that the altered permeability in the case of very small emboli may be due to absence of the normal contact between the vascular wall and the blood plasma. In the case of larger emboli the lesion occurs just on the proximal side of the embolus, and the author suggests that the lesion depends on defective nutrition of the vessel wall caused by stagnation of the blood stream. The lesion from the larger emboli persisted during some five days, and during that time an increase in the blood pressure due to epinephrine caused small hemorrhages from the damaged vessels, usually by diuresis but sometimes from rupture. These experiments support the view that massive hemorrhages in man result from ruptures and small hemorrhages from diapedesis. When blood plasma previously had passed out into the perivascular tissues the hemorrhages were annular. The experiments are clearly presented and illustrated by small but adequate colored photomicrographs.

Synopsis of Allergy. By Harry L. Alexander, A.B., M.D., Professor of Clinical Medicine, Washington University School of Medicine, St. Louis. Fabrikoid. Price, $3. Pp. 246, with 22 illustrations. St. Louis: C. V. Mosby Company, 1941.

This is an excellent, brief but fairly complete book on allergy. It should be of value to the general practitioner or internist whose interest is primarily in the practical application of the subject. In a limited space the author has covered every aspect of clinical allergy: asthma, hay fever, gastrointestinal allergy, headache, allergic dermatoses, physical allergy, drug allergy, bacterial allergy. Each of these subjects is briefly but thoroughly discussed. Controversial matter is excluded by giving the most generally accepted opinion wherever possible. When disagreement exists, the author's interpretation is given. Emphasis on methods of therapy and practical therapeutic advice is present throughout. Unlike most brief books on allergy, the space allotted to each subject is proportionate to its importance. The illustrations are necessarily few. Two of these ("atopic dermatitis" and "positive skin reactions") are not sufficiently clear. The appendix at the end of the book consists of thirty-eight pages filled with well organized, practical technical information on a variety of subjects, such as preparation of atopens, a list of household materials and the allergens they may contain, diagnostic methods and recipes for special diets.

Applied Neuroanatomy. Part I: The Spinal Cord. By Rafael Hernandez, B.S., M.D., Professor of Neurology, Meharry Medical College, Nashville. Paper. Price, $3.50. Pp. 123, with 95 illustrations. Ann Arbor: Edwards Brothers, Inc., 1941.

This book is based on lectures Hernandez delivered to his students throughout ten years as a teacher of neuroanatomy and clinical neurology. Only the most important facts, as the majority accept them today, are presented. The style is simple and direct, and the relation of neuroanatomy to neurophysiology and to diagnosis is stressed. The author makes no claim for originality and emphasizes that the material has been derived from the perusal of textbooks and original papers. The book has good diagrammatic drawings and should be useful for students and to practitioners who wish to refresh their minds on the essentials of neurology as it may affect their practice. The book is divided into two parts, one dealing with the spinal cord and the associated peripheral nervous system and the other dealing with the brain and the related peripheral nervous system. In each chapter the author gives a good bibliography of the subject.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

DEFENSE CHEMICALS AGAINST POISON GAS

To the Editor:—**Is there available in either book or pamphlet form information relative to defense chemicals against poison gas in warfare? If so, where can this be secured? If it is not available will you advise how to make proper gas masks, especially the chemicals or substances used in the neutralizing or filtering cartridges of these masks? I shall appreciate any other pertinent information available relative to gas defense.**

M.D., Pennsylvania.

ANSWER.—A booklet entitled Protection Against Gas, recently issued by the United States Office of Civilian Defense, Washington, D. C., will probably supply all the information desired. The Medical Aspects of Chemical Warfare, by E. B. Vedder (Baltimore, Williams & Wilkins Company, 1925), or Chemicals in War, by A. M. Prentiss (New York, McGraw-Hill Book Company, 1937), may also be consulted. The mainstay of defense against poison gas is activated charcoal. This substance alone is generally regarded as affording adequate protection against any toxic agents likely to be used against civilian populations. Under certain conditions—the practice varying from country to country—charcoal is supplemented by an admixture of soda lime, by filters designed to remove toxic smokes or by a variety of agents introduced for specific purposes.

LIFE EXPECTANCY FOR ADULT WITH RHEUMATIC HEART DISEASE

To the Editor:—**Could you tell me the known expectancy of life in a man of 30 who has postrheumatic mitral regurgitation and mitral stenosis (duration unknown)? May marriage be advised for such a person?**

M.D., New York.

ANSWER.—There is one essential fact that one must know in a case of rheumatic heart disease with mitral valve involvement such as that presented, and that is the degree of the involvement. If the condition is slight and the person has ordinary luck and lives with a reasonable amount of common sense, he not only can marry, raise a family and carry on his life work but can survive the full life expectancy or even longer. Some cases have recently been reported in which patients with definite rheumatic mitral stenosis lived to be over 80. If, however, the defect is considerable, the strain on the circulation and the possibility of serious complications are such that a long life cannot be prophesied; in fact, it is likely that with a high degree of mitral stenosis at 30 the man would be lucky to reach the age of 45 or 50. In other words, there is a wide range of possible longevity in the presence of mitral stenosis, dependent in the main on the amount of actual heart disease present. Furthermore, the more severe the mitral lesion the worse will be the effect of a recurrent rheumatic infection, which is always a possibility, even in middle age or later.

PROBABLE ATOPIC DERMATITIS

To the Editor:—**A woman aged 31 has had an allergic dermatitis of the face and neck for the past nine months. More than one hundred skin tests have been made, with no positive reaction. She has been under the care of several dermatologists and has received physical therapy, local applications to relieve itching and burning and internal medication (sedatives, histaminase and ephedrine). There are no abnormalities of the general physical makeup; the blood Wassermann reaction is negative; there is a normal blood sugar and urea content. She has been using a low starch diet. Despite all efforts, diagnostic and therapeutic, the cutaneous reactions continue. To ask advice and receive an opinion as to what more can be done in her behalf is the purpose of this query.**

M.D., Pennsylvania.

ANSWER.—The information given in the query permits only a general answer. The diagnosis of an "allergic dermatitis" of the face and neck, of only nine months' duration, is not sufficiently specific. No statement is made as to whether the lesion is of the contact (vesicular) type, the type characteristic of atopic dermatitis or the urticarial type. There is some justification in assuming, on the basis of the limited information given, that if the condition is on an allergic basis it belongs to the group of contact dermatoses. It is not stated in the query what substances were used in the skin tests or whether these were cutaneous, intracutaneous or patch tests. If the diagnosis of contact dermatitis is to be accepted, contact (patch) tests should be used. The materials to be tested should be selected on the basis of the history and the appearance of the lesions, including especially the distribution. Thus, with lesions limited to the face and neck in a woman aged 31, substances that come in contact with the face, neck, scalp and hands should be suspected first. These substances comprise cosmetics of all sorts, including preparations used on the finger nails, perfumes, preparations used on the scalp and hair, hand lotions, soaps, dyes and lacquers. In addition, one should not overlook substances with which the patient may come in contact occupationally, either in house work or in other occupations.

The skin of the hands, because of its greater resistance, may have no lesions and yet be responsible for bringing the offending material in contact with the much more delicate skin of the face and neck. The same explanation holds for substances used on the scalp. A more detailed discussion of this type of dermatitis is given in Dermatologic Allergy, by Marion B. Sulzberger (Springfield, Ill., Charles C. Thomas, 1940, pp. 87-126). The fact that the patient has been under the care of dermatologists would indicate that adequate local care has been given for the relief of symptoms. The measures used for local treatment vary greatly, of course, with the type of lesion prevailing from time to time. If the condition, however, is on an allergic basis, in which the patient is constantly adding insult to injury, local care in itself, while important, will not be sufficient to produce satisfactory results.

MICROANALYTIC BLOOD CHEMISTRY

To the Editor:—**In the practice of pediatrics it seems highly desirable to have blood chemistry determinations performed by micromethods as far as possible. I wish to set up a laboratory in connection with a children's clinic and would appreciate information and references on the subject. What is the amount of blood necessary? Is venous or capillary blood used? What is the relative reliability of the micromethod as compared to standard methods in which larger amounts of blood are used? What special apparatus, in addition to laboratory equipment used in older methods, is necessary for the micromethods?**

M.D., New York.

ANSWER.—Microanalytic methods are available for the determination in blood of the content of total nitrogen, nonprotein nitrogen, urea, uric acid, sugar, chlorides, calcium, magnesium and phosphate and of the carbon dioxide combining power. There is also a micromethod for determining the prothrombin time which, although not in the same category with the tests mentioned, may be found useful in a pediatric clinic. Venous or capillary blood may be used, varying in amount in the diffent determinations from 0.1 to 0.5 cc. When 0.1 or 0.2 cc. of plasma is required, as in the determination of the calcium, magnesium and phosphorus content and the carbon dioxide combining power, it is necessary to collect at least 0.5 cc. of whole blood. This amount can be obtained by routine finger, toe or heel puncture if collected in a small tube. Direct collection by pipet is more difficult because of the chance inclusion of air bubbles.

The reliability of these methods compares favorably with that of the standard macroprocedures if the technician performing the tests has been trained for highly accurate work requiring careful attention to detail. With poor or indifferent performance the result of any error in technic will be increased approximately in proportion to the reduction in the size of the sample analyzed.

If the clinic laboratory is completely outfitted for general blood chemical work little additional special apparatus is required. Special micropipets graduated at 0.1 and at 0.2 cc. are necessary for the collection and transfer of blood or plasma. Short centrifuge tubes and interchangeable cups connected by a ground joint are needed for the collection of blood under oil in the determination of the carbon dioxide combining power. In the determination of phosphates a 12 by 120 mm. test tube graduated at 1 and 2 cc. is recommended for the precipitation of protein. The Kuttner and Cohen procedure for calcium requires a platinum dish for ashing of the sample. The Hirschfelder and Serles method for calcium and magnesium recommends the use of a special 7 by 70 mm. centrifuge tube, tapered at the same angle as the ordinary 15 cm. tube. Kato's method for prothrombin requires a special microhemopipet capable of measuring 30 to 40 cubic millimeters of blood.

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TREATMENT OF ACID BURNS

To the Editor:—**What is the best neutralizing agent to use in the treatment of severe acid burns after washing with plenty of water? What is the best treatment after neutralization?**

M.D., Pennsylvania.

ANSWER.—This reply deals solely with the matter of neutralization of acid burns and not with the total treatment of such burns, since adequate discussion of severe burns would far exceed the space allotment of this department. For whatever reference may be made to neutralization ready acceptance may not be expected, since throughout the profession there is wide divergence of opinion. It appears to be established that as low a temperature as 113 F. may lead to coagulation of muscle and some injury to other tissues. Therefore the heat of chemical reaction from neutralizing agents more often than not may add injury to that already produced by the acid. On this account there are good reasons for advocating the use of a maximum amount of water over considerable periods of time to render acids inert rather than relying on any neutralizing agent. Through the use of water or saline solution the heat of chemical reaction is avoided or at least dissipated. Davidson (*Ann. Surg.* **85**:481 [April] 1927) has concluded that "the results obtained in the treatment of experimentally produced alkali and acid burns were decidedly better when the caustic agent was removed by dilution with water than when rendered inert by neutralization." In the case of chromic acid burns the situation may be different. Somewhat peculiarly, chromic acid is not hydrolyzed within tissues and its action may persist for many days, leading to undermined ulceration. After initial lavage, some advantage may result from the use of wet dressings of 5 per cent ammonium polysulfide for some such period as three days, followed by wet dressings of 5 to 10 per cent sodium citrate, sodium lactate or potassium and sodium tartrate for the purpose of stripping the chromium from the tissues. Depending on the severity of the chromium burn, such a wet dressing may be continued for another period of three to five days. In the case of acid burns of the eye, in addition to copious lavage there may be justification for the use of mild neutralizing agents such as 3 per cent sodium bicarbonate, although such applications may be painful and require local anesthesia. To revert to acid burns in general, along with the measures for the elimination of acid there may be requirements for the prevention and control of shock, but after elimination of the acid proper treatment is as for other forms of burns through many ramifications.

POSSIBLE DEATH FROM "ETHER CONVULSIONS"

To the Editor:—**A girl aged 5 years was taken ill about a month ago with pain in the abdomen and vomiting. Her temperature was normal, her abdomen was soft, and no localized area of tenderness was found. There were no signs of any respiratory infection. The next day I saw her three times. She had fever ranging from 100.4 to 101 F. in the evening. There was no more vomiting, and the bowels moved with an enema. Her complaints of abdominal pain were vague and varied from one examination to another. In the evening I found her sleeping on her stomach; she seemed to be without distress. The urine was normal at this time. Neither laxatives nor food were allowed except small amounts of fluids. An ice bag was kept on the abdomen. Two days later in the morning the child seemed actutely ill, with some abdominal rigidity in the right lower quadrant. The diagnosis of appendicitis was confirmed and the child was taken to the hospital at 4 p.m. The temperature then was 104 F. Five per cent dextrose was given immediately and she was taken to the operating room. The white blood count was 23,000. The operation was performed under ether anesthesia following induction with nitrous oxide and oxygen. A gangrenous, nonperforated appendix was found. Early during the operation the child had convulsions of a curious type; flexion of the forearms with pronation and adduction of the hands. Similar movements were observed in the lower extremities. The pulse rate was rapid, 150 a minute or more. The temperature seemed to rise; the pupils seemed to dilate and constrict alternately. Toward the end of the operation these convulsive movements increased in frequency. Breathing became shallow and laborious. Atelectasis of the right lung (middle and lower lobes) was found on percussion. Bronchoscopy was performed as soon as possible, but the breathing did not improve despite this and oxygen administration. The child stopped breathing during the bronchoscopy. Necropsy was not performed. Could you suggest what caused the child's death? She was normal as far as the heart and lungs were concerned.**

M.D., Maryland.

ANSWER.—She may have had a cerebral vascular accident or she may have simultaneously had encephalitis. Possibly she died of convulsions under ether anesthetic. This subject was reviewed by Frank J. Jirka and Frank C. Hofrichter in the *Illinois Medical Journal* **75**:549 (June) 1939. Most of the reported cases have occurred in children, many of whom have had a gangrenous appendicitis. Ether has been the anesthetic usually employed when this condition has occurred and the term "ether convulsions" has arisen for this syndrome. There is no specific treatment for the condition.

SPERMATOGENESIS AND FERTILITY

To the Editor:—**An x-ray technician aged 27 was found by semen examination to have only occasional motile spermatozoa in each specimen. In spite of three years of attempts, his wife has failed to become pregnant. His past history includes several significant points: As a schoolboy, although masculine, he preferred the company of girls. He is the only son in the family, which includes four sisters. At the age of 9 he had a bilateral herniorrhaphy. For the past four years he has done x-ray work, observing the common precautions of avoidance of exposure most of the time. He believes that his ejaculations are early and that during the first week of his marriage they were often premature. There is no venereal history. Masturbation before marriage was about twice a month. The man is well built and well nourished and is masculine in appearance except that there is less hair than ordinary on the chest and under the arms. The hair is long and dark. The voice is bass. The semen specimen was 15 cc. of cloudy whitish fluid. What would be the recommended procedure?**

M.D., Ohio.

ANSWER.—The fact that motile spermatozoa were found in the semen shows that the tubes are not obstructed. The bilateral herniorrhaphy has therefore nothing to do with the present sterility. The case is evidently endocrine in nature, a lessening of the spermatogenic function of the testes. It may well be that the continuous exposure to the x-rays may account for this, as it has been shown that this may take place in spite of protection (Huhner, Max: The Diagnosis and Treatment of Sexual Disorders in the Male and Female Including Sterility and Impotence, Philadelphia, F. A. Davis Company, 1941, p. 61). While endocrine therapy may be indicated in this patient, there is, unfortunately, no type of therapy which has proved reliable in the induction of spermatogenesis. Various gonadotropic substances have been used without success. Semen specimens should be obtained in a jar and not in a condom, and no heat should be applied to the specimen. If the ejaculations are premature or rapid, a Huhner test should be made to see whether the spermatozoa actually reach the cervix.

CYANIDE DERMATITIS

To the Editor:—**What is the best method of treatment of dermatitis venenata due to contact with solutions containing sodium and potassium cyanide? This is an occupational hazard with workers who are doing gold plating work, and it is important to keep these men at that particular job if possible, as they are experienced. What is the accepted local treatment for exposed parts of the body, such as the hands, which are commonly in contact with the offending solutions?**

Allan Klein, M.D., North Bergen, N. J.

ANSWER.—The best treatment for cyanide dermatitis is to avoid all contact of the skin with irritant cyanide solutions, particularly further contact after the appearance of any dermatitis. When cyanides are present on skin surfaces the cyanide is transformed promptly to the carbonate, so that the lesion produced foremostly is an alkali burn. Some physicians are apprehensive that enough cyanide may be absorbed to induce systemic cyanide poisoning. While this may be doubted, there is every reason for the prompt removal of any such solution in order to avoid the action of alkali. The best treatment probably is the use of boric acid ointment U. S. P. or wet boric acid dressings. Boric acid admirably serves as a buffering agent and if persistently used will maintain a p_H in a range from 0.6 to 0.8. The same buffering action may be secured through the use of citric acid or citrates, but a preference is expressed for boric acid. When deep ulcerations are produced by cyanide or, more likely, by the carbonate, with ensuing eschars, superficial débridement may be indicated.

METALLIC TASTE IN MOUTH

To the Editor:—**Kindly give me any information you have regarding the cause of a metallic taste in a patient's mouth and specifically whether a vitallium bridge could produce it.**

J. J. Sazama, M.D., Bloomer, Wis.

ANSWER.—A metallic taste is a relatively common incident among adults, though not ordinarily discussed in textbooks or medical literature. An intermittent or constant metallic taste in the mouth may be caused either by the ingestion of any of the soluble metals or by the local application to the nose, mouth or adjacent structures of solutions containing such metals, though rarely do such metallic tastes occur except in the presence of metallic restorations in the mouth which are electropotentially different from the metals taken. It has been proved and further verified by many physicians and dentists that metallic dental restoration such as dentures, fillings, bridges and inlays, of dissimilar character and occupying different positions in the standard electromotor series of metals, may cause an intermittent metallic taste as a result of the chemical ionization or an interchange of metallic electrons through the saliva which serves as the electrolyte. Even neutral saliva is sufficient to

cause some electrogalvanism, but strongly alkaline or acid saliva intensifies the reaction.

These studies may be reviewed from the following bibliography:

Lain, E. S.: Electrogalvanic Lesions of Oral Cavity Produced by Metallic Dentures, THE JOURNAL, March 11, 1933, p. 717.
Lain, E. S.; Schriever, William, and Caughron, G. Sherrill: *J. Am. Dental A.* **27:** 1765 (Nov.) 1940.
Lippman, A.: Disorders Caused by Electric Discharges in Mouth in Metallic Dentures, *Deutsche med. Wchnschr.* **56:** 1394 (Aug. 15) 1930.
Solomon, H. A.; Reinhard, M. C., and Goltz, H. L.: Salivary Influence on Galvanism, *D. Items Int.* **60:** 1047 (Nov.) 1938.
Dreher, G. C.: That Metallic Taste, *Dental Survey*, November 1937.
Hodgen-Shell: Dental Materials, St. Louis, C. V. Mosby Company, 1938, p. 228.
Mead, S. V.: Diseases of the Mouth, St. Louis, C. V. Mosby Company, 1940, p. 655.

Experiments with the metal known as vitallium discloses that there is only an inappreciable amount of electrogalvanism which takes place between this and the so-called noble metals. However, all metals as used in dental restoration must be alloyed with two to five others. Therefore it is possible that even a vitallium bridge in the mouth which contains other restorations, or after a metallic drug has been taken, might be an occasional source of a metallic taste.

LOSS OF BODY FAT IN DEPANCREATIZED DOG

To the Editor:—**In *The Journal*, Sept. 6, 1941, page 852, there is published under Glandular Physiology and Therapy the article "The Pancreas as an Organ of Internal Secretion," by Waters and Best. Will you please answer the following question? On page 854, third paragraph, this statement is made: "The ketosis in a depancreatized fat dog is greater than in a lean one, but this species is characterized by its efficiency in metabolizing fats without ketosis. The loss of body fat is rapid, but the ketosis may be so severe . . ." What causes this rapid loss in body fat in the depancreatized dog?** Richard P. Shapiro, M.D., Philadelphia.

ANSWER.—In the diabetic state there is an increase in the metabolic rate, dextrose is not as available to the tissues as is normally the case and some is lost in the urine. This results in an increased demand for alternative sources of energy, namely proteins and fats. Thus withdrawal of fat from the so-called depots occurs, with a consequent increase in the oxidation of fat in the liver, with increase in acetone body production, and in the muscles. Little is known about the mechanism of this mobilization of depot fat. There is no good evidence that it is under nervous control. It is likely that hormonal control plays a part. Thus it is known that extracts of the anterior lobe of the pituitary lead to an increase in the mobilization of liver fat from the fat depots (Barrett, H. M.; Best, C. H., and Ridout, J. H.: *J. Physiol.* **93:**367 [Sept. 16] 1938). To what extent this is a normal physiologic action of the anterior lobe of the pituitary gland can only be surmised.

HASTINGS' STAIN

To the Editor:—**Can you supply an accepted procedure for preparation and use of Hastings' stain for blood films? I am experimenting with the use of the opsonic index in possible undulant fever, and I find that most procedures seem to prefer this stain, yet I can find nothing on hand that gives the method.** Theodore Baker, M.D., Niagara Falls, N. Y.

ANSWER.—Hastings' stain has never been standardized. It is a blood stain of the eosin-methylene blue type, similar to Wright stain, differing from the latter chiefly in the method of preparation. It was described by T. W. Hastings (*J. Exper. Med.* **7:**265, 1905). The chief respect in which it differs from the stain described by Wright is that the polychrome methylene blue is neutralized with acetic acid and, when mixed with the eosin solution, a small amount of fresh methylene blue solution is mixed with it. Inquiry of the stain companies indicates that they regard Hastings' stain and Wright stain as identical. The procedure referred to in the inquiry was proposed by I. F. Huddleson; his publication definitely specifies Hastings' stain, purchased from the Hartman-Leddon Company of Philadelphia. A personal letter from Dr. Huddleson states that this is the only reliable source of this stain that he has found for the technic in question. A communication from this company states that whenever Hastings' stain is ordered for the Huddleson technic the company takes care to see that it is of the same type as that which Dr. Huddleson has been purchasing. Information is not available, however, to the Biological Stain Commission as to whether there is any essential difference between this stain and that which the same company regularly sells under the name of Wright stain.

MATCHING OINTMENT COLORS TO SKIN

To the Editor:—**Please mention a dye and the amount to use for coloring a white ointment to be used on the face.** M.D., Roxbury, Mass.

ANSWER.—A colorless ointment base or perhaps a cold cream can be made to correspond to the color of the patient's skin by the cuticolor powder devised by Fantus and Dyniewicz (Cuticolor Preparations, *J. Am. Pharm. A.* **27:**878 [Oct.] 1938, which consists of a mixture of red and yellow ferric oxides with zinc oxide. This differs from calamine powder in containing the yellow oxide, which allows a better match to be made with the color of the skin. The proportions given in the article cited do not apply to all lots of these powders. Fantus and Dyniewicz used 3 per cent of the red oxide and 4 per cent of the yellow powder. In another lot used elsewhere the proportion of yellow oxide had to be cut down to a fraction of 1 per cent to get the proper color. This has to be determined by experiment with each lot of powder. If a darker shade is needed, blood charcoal may be added to suit.

DELIVERY OF TRUNK AFTER HEAD DELIVERY

To the Editor:—**In the second stage of an otherwise normal labor how long is it safe to leave the body of the fetus undelivered, having the head completely delivered with the respiratory passages cleared of mucus and no cord around the neck?** G. A. Prachar, M.D., Tecumseh, Neb.

ANSWER.—It is probably safe to leave the body of the fetus in the uterus for as long as ten minutes after the head has been delivered, provided the respiratory passages are cleared of mucus and there is no constriction about the neck. Difficulties in the delivery of the fetal trunk arise as a result of obstructions to the delivery of the shoulders. An excessively large baby, the shoulder girdle in the transverse plane of the pelvis or a tetanic contraction of the uterus about the fetal trunk as a result of a long and difficult delivery may seriously interfere with the delivery of the fetal body. In most instances intracranial damage and fetal death are the result of the trauma of the manipulations incidental to attempts at delivery or the interference with fetal circulation. Care in delivery rather than the time factor determines the likelihood of damage to the baby.

HUMIDITY AND COLDS

To the Editor:—**What effect does the household humidity have on susceptibility to the common cold?** F. L. R. Roberts, M.D., Spirit Lake, Iowa.

ANSWER.—Although it is generally believed that excessive dryness may predispose to increased incidence of infections of the respiratory tract and to susceptibility to the common cold, actual evidence is difficult to obtain. The problem must be studied, therefore, more from the point of view of physiologic principles than from that of actual fact. Some of the foremost authorities on nasal function, notably Hilding and Proetz, have demonstrated the adverse effects of drying on ciliary action and on the effective functioning of the "mucous blanket" covering the nasal epithelium. Proetz, particularly, has suggested that excessive drying of the nasal mucosa may predispose to trauma from improper blowing of the nose, allowing the formation of denuded areas of ciliated nasal epithelium into which viruses or bacteria might enter. This interference with the normal functional state of the nasal mucosa by drying might thus increase susceptibility to acute rhinitis. It would seem indicated, therefore, to prevent this adverse drying action on the nasal epithelium if possible, and it should be possible to accomplish this by increasing the moisture content of the air.

USE OF CACODYLATES

To the Editor:—**I should like some information on the values and indications for use of the various cacodylate compounds.** M.D., California.

ANSWER.—Sodium cacodylate has been given a place in the U. S. Pharmacopeia for many years. In New and Nonofficial Remedies, 1941, page 111, two pages are devoted to various dosage forms of sodium cacodylate. At one time sodium cacodylate had a wide vogue, being used particularly in such conditions as Hodgkin's disease, the leukemias and lymphosarcoma, and, of course, it was even once suggested that it be used for the treatment of syphilis. It is questionable today whether there is any real indication for further continuation of this preparation in the U. S. P. The Council on Pharmacy and Chemistry has recently voted to delete sodium cacodylate from N. N. R. It certainly is of no value in the diseases mentioned and there are no indications for its use.